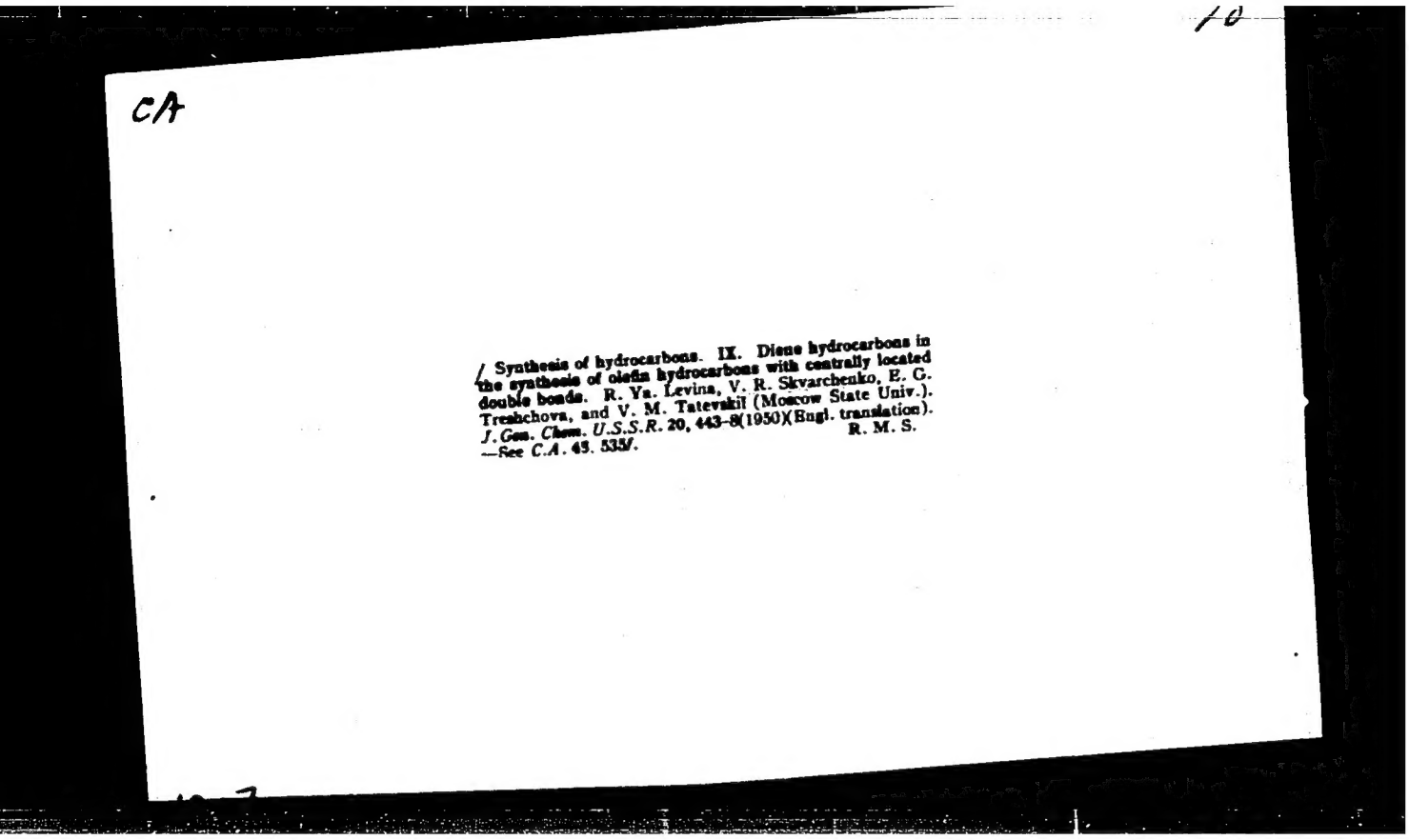

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Synthesis of hydrocarbons. IX. Diene hydrocarbons in the synthesis of olefin hydrocarbons with centrally located double bonds. R. Ya. Levina, V. R. Skvarchenko, E. G. Treshchova, and V. M. Tatevskiĭ (Moscow State Univ.). *J. Gen. Chem. U.S.S.R.* 20, 443–8(1950)(Engl. translation). —See *C.A.* 45, 535*f*. R. M. S.

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Synthesis of hydrocarbons. X. Partial reduction of conjugated-diene hydrocarbons by sodium in liquid ammonia. R. Ya. Levina, V. R. Skvarchenko, V. N. Tsitsyskv, and E. G. Treshchova (J. gen. Chem. USSR, 1950, 20, 694—699 [U.S. transl., 721—726]; cf. A., 1950, II, 175).—Partial reduction of $(CHMe:CH)_2$ by Na in liquid NH_3 affords a mixture of the 1 : 2- and 1 : 4-dihydrocompounds, $CHMe:CHBu^n$ (60—65%) and $(:CHMe)_2$ (35—40%), and is thus unsuitable for the prep. of the latter; Raman-spectral analysis (details given and discussed) proves the presence of both cis- (30%) and trans-forms (70%). $CHMe:CHBu^n$ is synthesised, for comparison purposes, from $CHMe:CH\cdot CH_2Cl$ and EtMgBr, a mixture of cis- (20%) and trans-forms (80%) being obtained.

Slow addition of $(CHMe:CH)_2$ (16 g.) in Et_2O to Na (36 g.) in liquid NH_3 at —50° to —60°, stirring for 5—6 hr., and keeping overnight afford a product, C_4H_{12} (75%), b.p. 67—67.5°/761 mm., $d_4^{15°}$ 0.6902, $n_D^{15°}$ 1.3962 [freed from starting materials by $(:CH\cdot CO)_2O$] which is analysed spectrographically (Raman-spectral lines tabulated). Reaction of aq. HCl with $(CH_2:CH)_2$ affords 1-chlorobut-2-ene, b.p. 84°/748 mm., $d_4^{15°}$ 0.9282, $n_D^{15°}$ 1.4350, and 3-chlorobut-1-ene, b.p. 64°/749 mm., $d_4^{15°}$ 0.9090, $n_D^{15°}$ 1.4150; both isomers react with EtMgBr in Et_2O in the usual manner and give identical products, viz., mixed cis- and trans-hex-2-ene, b.p. 67.5—67.7°/748.5 mm., $d_4^{15°}$ 0.6805, $n_D^{15°}$ 1.3940.

E. S. Stern.

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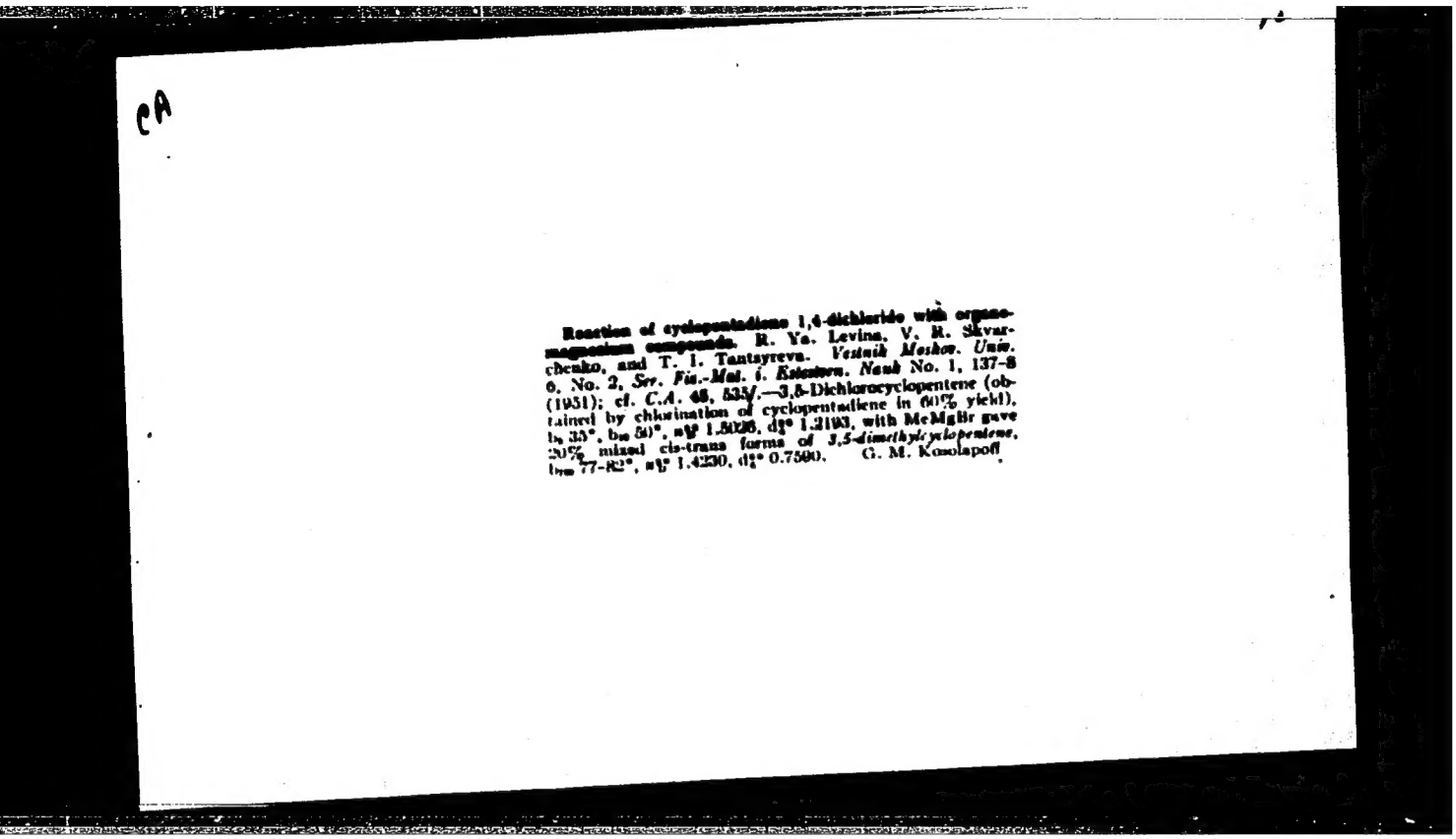
R. Ya. Levina, V. R. Skvarchenko, E. A. Viktorova, V. M. Tatevskii, and E. G. Treshchova, "Synthesis of hydrocarbons. XI. Partial reduction of diene hydrocarbons with a conjugated system of double bonds by sodium in liquid ammonia." (p. 690)

SO: Journal of General Chemistry, (Zhurnal Obshchei Khimii), 1950, Vol. 20, No. 4.

SKVARCHENKO, V.R.

Synthesis of alkenes and alkynes with a central position of the unsaturated link. Uchenye Zapiski Moskov. Gosudarst. Univ. im. M.V.Lomonosova No.131, 167-248 '50.
(CA 47 no.19:9893 '53)



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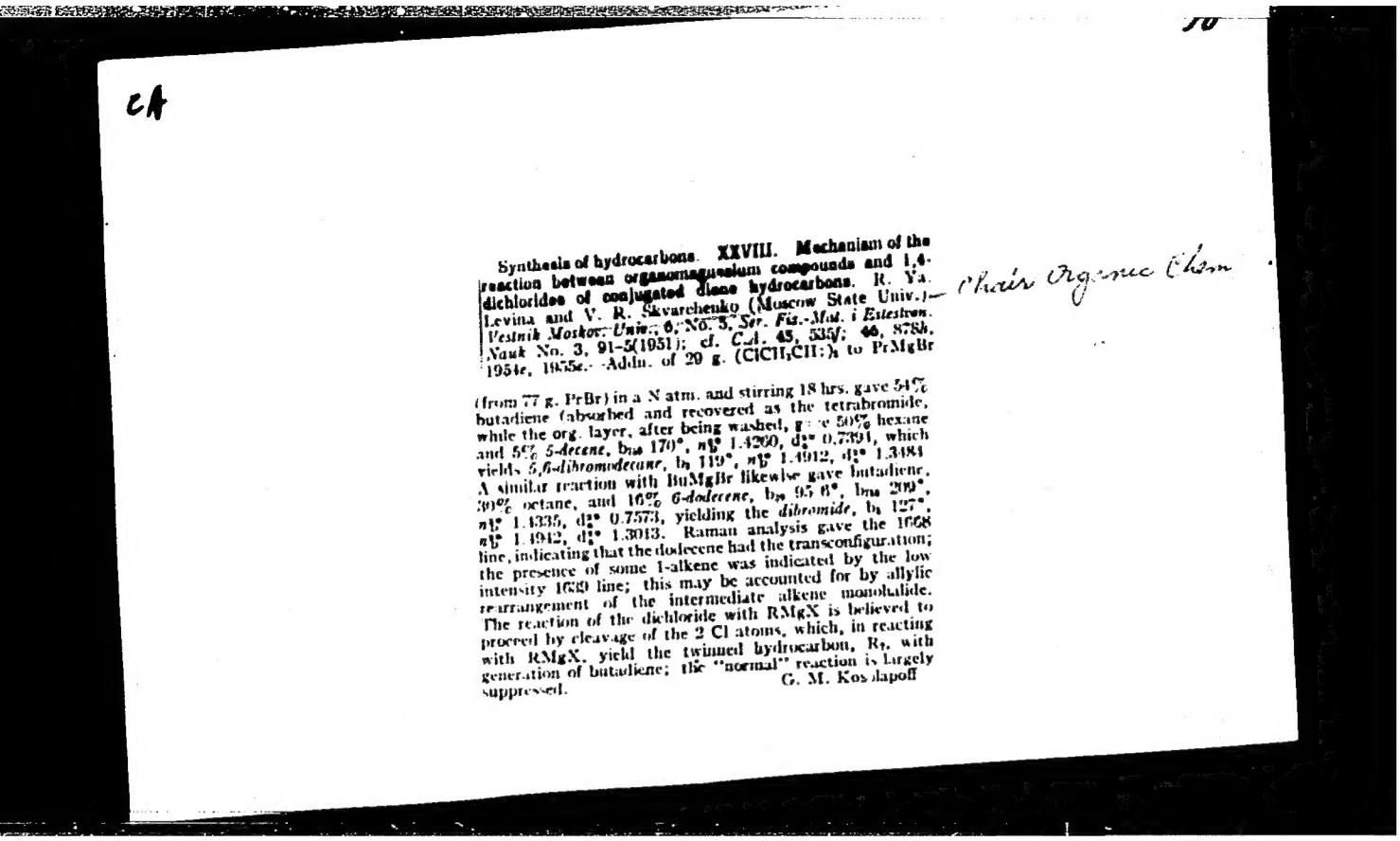
Reaction of cyclopentadiene 1,4-dichloride with organomagnesium compounds. R. Ya. Levina, V. R. Skvarchenko, and T. I. Tantsyreva. *Vestnik Moskov. Univ. No. 2, Ser. Fiz.-Mat. i Estestven. Nauk* No. 1, 137-8 (1951); cf. *C.A.* 45, 5334.—3,5-Dichlorocyclopentene (obtained by chlorination of cyclopentadiene in 60% yield), bp 35°, bp 50°, n_D^{20} 1.5026, d_4^{20} 1.2193, with MeMgBr gave 20% mixed cis-trans forms of *3,5-dimethylcyclopentene*, bp 77-82°, n_D^{20} 1.4230, d_4^{20} 0.7590. G. M. Kosolapoff



Synthesis of hydrocarbons. XXVIII. Mechanism of the reaction between organomagnesium compounds and 1,4-dichlorides of conjugated diene hydrocarbons. R. Ya. Levina and V. R. Skvarchenko (Moscow State Univ.). *Vestnik Moskov. Univ.*, 6, No. 5, *Ser. Fiz.-Mat. i Estestvon. Nauk* No. 3, 91–5(1951); cf. *C.A.* 45, 535*f*; 46, 878*h*, 1954*e*, 1955*e*. Addn. of 20 g. (ClCH$_2$CH:)$_2$ to PrMgBr (from 77 g. PrBr) in a N atm. and stirring 18 hrs. gave 54% butadiene (absorbed and recovered as the tetrabromide, while the org. layer, after being washed, gave 50% hexane and 5% *5-decene*, b_{760} 170°, n_D^{20} 1.4260, d_4^{20} 0.7391, which yields *5,6-dibromodecane*, b_4 119°, n_D^{20} 1.4912, d_4^{20} 1.3484. A similar reaction with BuMgBr likewise gave butadiene, 39% octane, and 16% *6-dodecene*, b_{20} 95.8°, b_{760} 209°, n_D^{20} 1.4335, d_4^{20} 0.7573, yielding the *dibromide*, b_4 127°, n_D^{20} 1.4942, d_4^{20} 1.3013. Raman analysis gave the 1668 line, indicating that the dodecene had the transconfiguration; the presence of some 1-alkene was indicated by the low intensity 1639 line; this may be accounted for by allylic rearrangement of the intermediate alkene monohalide. The reaction of the dichloride with RMgX is believed to proceed by cleavage of the 2 Cl atoms, which, in reacting with RMgX, yield the twinned hydrocarbon, R_2, with generation of butadiene; the "normal" reaction is largely suppressed.

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Synthesis of hydrocarbons. XLIII. Partial reduction of diene hydrocarbons with conjugated system of double bonds by sodium in liquid ammonia. R. Ya. Levina, V. R. Skvarchenko, V. N. Kostin, E. G. Treshchova, and A. S. Okunevich (Moscow State Univ.). *Sbornik Statei Obshchei Khim., Akad. Nauk S.S.S.R.* 1, 355–61(1953); cf. *C.A.* 47, 12210*d*.—Reduction by Na-NH_3 of 2,3-dimethyl-1,3-butadiene results in addn. of H mainly (98–9%) in the 1,4-positions, and to a minor extent in the 1,2-positions. With the unsym. diene, 2-methyl-3,4-pentadiene, 1,4-addn. predominates also (93–4%). To 87 g. Na in 500 ml. liquid NH_3 was added with stirring an Et_2O soln. of 39 g. 2,3-dimethyl-1,3-butadiene; after 2 hrs. the mixture was dild. with Et_2O, evapd. at room temp., washed and dried, yielding 58% total reduction products, which were sepd. into 3 g. crude material, b_{744} 50–72.1°, and 19 g. *2,3-dimethyl-2-butene*, b_{744} 72.1–2.2°, n_D^{20} 1.4134, d_{20} 0.7077; the Raman spectrum of the product had a 1674 $cm.^{-1}$ line characteristic of the above structure. Raman spectrum of the forerun showed the presence of 2,3-dimethyl-1-butene. Similar reduction of 25 g. 2,4-dimethyl-1,3-pentadiene with Na-NH_3 gave 72% reaction products composed of material, b_{744} 81.9°, n_D^{20} 1.4038, d_{20} 0.6917, whose Raman spectrum showed the absence of any contaminant in the *2,4-dimethyl-2-pentene* produced (for comparison a specimen was prepd. by pyrolysis of diisopropylcarbinol acetate; the product, b_{744} 82.1–2.2°, n_D^{20} 1.4072, d_{20} 0.6927, Raman spectrum given. Similar Na-NH_3 reduction of 2-methyl-2,4-pentadiene (b_{744} 70.3°, n_D^{20} 1.4520, d_{20} 0.7200) gave 2 fractions: 50% *2-methyl-3-pentene*, b_{744} 57.5–8.5°, n_D^{20} 1.3905, d_{20} 0.6663, and about 8% material, b_{744} 58.5–67°, which also contained some 2-methyl-2-pentene, confirmed by Raman spectrum of this mixt. in comparison with that of a pure synthetic specimen. Satn. of $MeCH{:}CHCH{:}CH_2$ (25 g.) with 30 g. dry HBr with cooling, followed by addn. of the crude resulting bromide to MeMgBr (from 39 g. MeBr) and stirring 1.5 hrs. in the cold and 6 hrs. at reflux, gave 40% pure *3-methyl-2-pentene*, b_{744} 57.5–8.5°, n_D^{20} 1.3905, d_{20} 0.6305, whose Raman spectrum was not given in the paper; that of the specimen prepd. by Na-NH_3 reduction is given. Similarly, 24 g. $CH_2{:}CMeCH{:}CH_2$ treated with dry HBr and the resulting bromide treated with MeMgBr gave 13 g. (43%) *2-methyl-3-pentene*, b_{744} 67°, n_D^{20} 1.4025, d_{20} 0.6919, Raman spectrum given.

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n^{18}_D 1.4400, d_{18} 0.7912 (Raman frequency 1641 cm.$^{-1}$), and 6) *allylcyclohexane*, b_{760} 151–1.5°, n^{18}_D 1.4500, d_{18} 0.8135 (Raman frequency 1641 cm.$^{-1}$). Cf. Arnold and Dowdall, (*C.A.* 42, 8109e). XLIIIA. New reaction of tetrahydrophthalic anhydrides (products of diene synthesis) with phosphorus pentoxide. R. Ya. Levina, V. R. Skvarchenko, N. S. Kataeva, and E. G. Treshchova (Moscow State Univ.). *Zhur. Obshchei Khim.* 23, 1998-2001(1953); cf. *C.A.* 48, 9939c; 49, 829e.—The reaction of various substituted tetrahydrophthalic anhydrides with P_2O_5 does not go through the formation of a ketene, and the decarbonylation step is simultaneous with dehydration, in which the α-H atoms participate. Heating 20 g. 2,3-dimethyl-1,3-butadiene with 35 g. citraconic anhydride in C_6H_6 9 hrs. gave 33% *1,-4,5-trimethyl-1,2,3,6-tetrahydrophthalic anhydride*, b_{2-3} 175–7°, n^{18}_D 1.4780, d_{18} 1.1052. This (19.4 g.) treated with 14.4 g. P_2O_5 and heated gently, entered a vigorous reaction (temp. rose to 200°); the mixt. was then heated to 290° and finally to 350°, yielding a distillate of 65% pure *1,2,4-trimethylbenzene*, b_{760} 168.5°, n^{18}_D 1.5030, d_{18} 0.8770; the Raman spectrum also agreed with that of the pure substance. No indications of mesitylene or 1,2,3-trimethylbenzene were found. If the reaction went through the ketene stage, the presence of H atoms in the 1 and 2 positions would have been necessary. G. M. Kosolapoff

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Synthesis of hydrocarbons. XXXIX. The dichloride of 2,3-dimethyl-1,3-butadiene in the synthesis of alkenes with iso-structure and central location of the double bond. R. Ya. Levina, V. R. Skvarchenko, A. S. Okunevich, and E. G. Treshchova (Moscow State Univ.). *Zhur. Obshchei Khim.* 23, 725–8(1953)*F*; cf. *C.A.* 45, 535*f*; 48, 3885*h*.—Lowering of the temp. of chlorination of $(CMe:CH_2)_2$ (I) does not affect the yield of the product; chlorination was best run at −75° in abs. Et_2O until the theoretical gain in wt. was reached, and evapn. of the solvent gave 32% I *dichloride* (II), b_{15} 80–4°, m. 35°, and also a lower-boiling fraction and 25% unchanged I. To MeMgBr from 120 g. MeBr in 300 ml. Et_2O was added with cooling 39 g. II, and the mixt. allowed to stand overnight, stirred 6 hrs. at room temp. and refluxed 2 hrs., decompn. with 10% AcOH gave 40% I and 23% *3,4-dimethyl-3-hexene*, b_{735} 119–19.5°, b_{764} 119.2–19.4°, n^{20}_D 1.4275, d_{20} 0.7415, whose Raman spectrum contained the following lines: 245(1), 313(0), 409(3), 421(0.5) 455(0.8), 480(2), 510(1), 555(0.5), 585(2), 600(1.5), 679(10), 746(0), 790(0.5), 840(1.5), 907(0), 912(0), 938(3.5), 970(1), 998(4.5), 1018(1), 1056(2.5), 1074(5), 1101(1.2), 1144(1), 1170(1.5), 1196(1.8), 1266(0), 1237(1.5), 1268(2), 1322(5), 1380(5), 1440(2), 1449(10), 1640(0.5) and 1664(20). The 1640 line indicates an impurity of an α-ethylenic hydrocarbon. PrMgBr (from 123 g. PrBr) with 47.5 g. II similarly gave some I, 17% hexane, and 11% *5,6-dimethyl-5-decene*, b_{737} 91.1–1.2°, n^{20}_D 1.4440, d_{20} 0.7782, Raman spectrum (cm.⁻¹) 276(1), 335(0.8), 397(0.5), 410(1), 491(1), 522(1), 580(1.5), 603(0.5), 671(0.5), 695(1.5), 735(0.5), 750(1), 792(1), 821(2.5), 845(0.5), 873(3), 895(4), 925(1), 956(1), 999(1), 1050(1), 1078(1), 1085(1), 1102(1), 1133(0.5), 1170(0.5), 1198(1.5), 1240(1), 1290(1.5), 1301(2.5), 1329(1.5), 1382(3), 1408(1), 1455(10), 1459(3), 1640(1.5), and 1665(12). The results indicate a 10% admixt. of an α-ethylenic hydrocarbon, that might have formed by allylic shift of the interm. 3,4- unstd. mono-Cl deriv. during the reaction. Thus, I behaves analogously to $(CH:CH_2)_2$ in that their

dichlorides yield the α-ethylenic by-products with RMgX (*C.A.* 46, 3941f). XL. **Reaction of the dichloride of cyclopentadiene with organomagnesium compounds.** R. Ya. Levina, T. I. Tantsyreva, and E. G. Treshchova. *Ibid.* 729–35.—To 33 g. cyclopentadiene (I) in 1 vol. Et_2O was added with ice-NaCl cooling 35.4 g. Cl; distn. gave 60% *dichloride*, $C_5H_6Cl_2$ (presumably the 3,5-Cl_2 compd. although the *3,4-analog* might be present), b_3 35°, b_{20} 50°, n_D^{20} 1.5026, d_{20} 1.2193, darkens in air and even in N. Much high-boiling matter was also formed. To MeMgBr (from 520 g. MeBr) was added with ice-NaCl cooling 120 g. of the dichloride, the mixt. being stirred 3 hrs. at room temp. and 4 hrs. at reflux. Decompn. with dil. AcOH and distn. over Na gave 20% C_7H_{12}, composed of some 60–70% *3,5-* and 30–40% *3,4-dimethylcyclopentene* which resulted from allylic shift during the reaction. The mixt. could not be sepd. into components and the whole b_{741} 81–2°, n_D^{20} 1.4200, d_{20} 0.7614. The presence of the Raman line at 1613 cm.$^{-1}$ indicated the cyclopentene structure with Me groups not at the double bond. The mixt. hydrogenated over Ni-Al_2O_3 at 150° yielded *mixed 1,2-* and *1,3-dimethylcyclopentanes*, b_{745} 89.5–90.5°, n_D^{20} 1.4113, d_{20} 0.7457; the compn. of the mixt. was deduced from known consts. of the ingredients (Bazhulin, *et al.*, *C.A.* 42, 6238*i*; Kazanskii, *et al.*, *C.A.* 42, 4535*h*). Similarly EtMgBr gave 12% *mixed 3,4 and 3,5-diethyl-1-cyclopentenes*, b_{741} 140.3°, n_D^{20} 1.4390, d_{20} 0.7922 [it is suggested that the supposedly pure 3,5-di-Et deriv. cited by Barber and English, *C.A.* 46, 440g, is also a similar mixt.], and 5% *3-ethylcyclopentene*, b_{741} 97°, n_D^{20} 1.4310, d_{20} 0.7928 (*C.A.* 47, 3248*c*). PrMgBr gave apparently only *3-propylcyclopentene* (although some 4-Pr analog might have been present), b_{745} 125°, n_D^{20} 1.4370, d_{20} 0.7918, in 7% yield. Such a product can arise from formation of alkylcyclopentenylmagnesium bromides, which with H_2O yield the above material. G. M. Kosolapoff

LEVINA, R.Ya.; SKVARCHENKO, V.R.; KATAYEVA, N.S.; TRESHCHENKO, Ye.G.

Synthesis of hydrocarbons. Part 43. New reaction of tetrahydrophthalic anhydride (products of diene synthesis) with phosphorus pentoxide. Zhur.ob.khim.23 no.12:1998-2001 D '53. (MLRA 7:2)

1. Laboratoriya organicheskoy khimii im. akademika N.D.Zelinskogo Moskovskogo gosudarstvennogo universiteta.
(Phthalic anhydride) (Phosphorus pentoxide)

SKVARCHENKO, V. R.

(4)

Synthesis of hydrocarbons. New reaction of tetrahydrophthalic anhydrides (products of diene synthesis) with phosphorus pentoxide. R. Ya. Levina, V. R. Skvarchenko, V. N. Kostin and N. S. Kataeva. *Doklady Akad. Nauk S.S.S.R.* 91, 95–8(1953).—Tetrahydrophthalic anhydrides heated with P_2O_5 split off 2 moles CO and H_2O, forming aromatic hydrocarbons. Thus, 29 g. 3,6-dimethyltetrahydrophthalic anhydride (I) treated in the molten state with 23 g. P_2O_5 and heated carefully to 110–20° reacted vigorously with heat evolution and distn. of the product (completed by heating to 230°); washing and distn. gave 80% *p*-xylene, identified by oxidation to *p*-$C_6H_4(CO_2H)_2$. Similarly the 3,6-di-*Me isomer* of I gave 60% pure *m*-xylene, and the 4,5-isomer (II) gave 40% pure *o*-xylene. Heating II with 10% KOH, evapn., and acidification gave *4,5-dimethyltetrahydrophthalic acid* (III), decomp. 135°, which heated similarly with P_2O_5 gave 80% *o*-xylene. II treated with dry HCl in abs. EtOH gave 72% *di-Et ester* of III, b_7 153°, $n^{20}D$ 1.4670, d_{20} 1.0450, which heated with P_2O_5 similarly gave 31% *o*-xylene, with CO and C_2H_4.

G. M. Kosolapoff

SKVARCHENKO, V. R., LEVINA, R. YA., KOSTIN, V. N., TRESHCHOVA, YE. G., AND OKUNEVICH A. S.

Syntheses of Hydrocarbons. XLIV Partial Reduction of Diene Hydrocarbons with a Conjugated System of Double Bonds with Sodium in Liquid Ammonia, page 355
Sbornik statey po obshchey khimii (Collection of Papers on General Chemistry), Vol I, Moscow-Leningrad 1953, pages 762, 766

Moscow State U, Laboratory of Organic Chemistry imeni Acad N. D. Zelinskiy

SKVARCHENKO, V R.

USSR/Chemistry FD-1246

Card 1/1 : Pub. 129-8/25

Author : Levina, R. Ya; Shabarov, Yu. S.; Skvarchenko, V. R.

Title : Hydrocarbon synthesis XLIV. Formation of alkanes resulting from the reaction of magnesium-organic compounds with un-saturated 1, 4-dichlorides.

Periodical : Vest. Mosk. un., Ser. fizikomat. i yest. nauk, 9, No 1, 63-67, Feb 1954

Abstract : Established that the formation of paraffin hydrocarbons from the reaction of a Grignard Reagent with ethylenic and with acetylenic 1, 4-dichlorides is similar. The yield is dependent on the structure of the radical in the Grignard Reagent, the normal type giving a greater yield than those of the iso structure. One table; equations, thirteen references, four foreign.

Institution : Chair of Organic Chemistry

Submitted : July 7, 1953

LEVINA, R.Ya.; SHABAROV, Yu.S.; SKVARCHENKO, V.R.

Synthesis of hydrocarbons Part 44: Formation of alkanes from the interaction of magnesium organic compounds and unsaturated 1,4-dichlorides. Vest.Mosk.un. 9 no.2:63-67 F '54. (MLRA 7:5)

1. Kafedra organicheskoy khimii.
(Paraffins) (Magnesium organic compounds) (Chlorides)

USSR/Chemistry - Synthesis

Card 1/1 Pub. 22 - 32/56

Authors : Skvarchenko, V. R.; Levina, R. YA.; and Okhlobistin, O. Yu.

Title : Synthesis of hydrocarbons. New method of synthesizing symm.octahydrophenanthere (octanehtrene), 4,5-cyclopentanoindan and their homologues.

Periodical : Dok. AN SSSR 99/5, 789-792, Dec 11, 1954

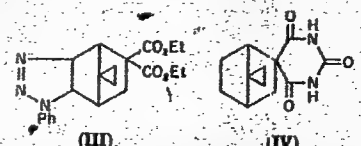
Abstract : The reaction of splitting tetrahydropthalic anhydrides under the effect P_2O_5 was used in the drivation of tricyclic condensed hydrocarbons: symm. octahydrophenanthere (octanethrene), 4,5-cyclopentanoindan and their homologues. The basic diene hydrocarbons were found to be 1,1'-dicyclohexenyl and 1,1'-dicyclopentenyl, the first of which conbined with maleic anhydride yielded 1,2,3,4,5,6,7,8-octahydrophenanthrene. Other hydrocarbons derived from 1,1'-dicyclopentenyl mixed with maleic, citraconic and pyrocinchonine anhydrides, are listed. Twelve references: 4-USA;4-USSR and 4-German (1873-1953).

Institution : The M. V. Lomonosov State University, Moscow

Presented by: Academician A. N. Nesmeyanov, July 16, 1954

SKVARCHENKO, V.R.

Synthesis of hydrocarbons. XLVIII. Tetramethylbenzenes from adducts of alkadienes to pyrocinchoninic anhydride. V. R. Skvarchenko, R. Ya. Levina, and T. V. Kostroma. (Moscow State Univ.) *Zhur. Obshchei Khim.* 25, 1094–7(1955); cf. *C.A.* 49, 3848*a*, 5414*d*, 50, 2449g.—Heating 23 g. 2,3-dimethyl-1,3-butadiene with 27 g. pyrocinchoninic anhydride (I) 20 hrs. at 170–80° gave 90% *1,2,4,5-tetramethyl-1,2,3,6-tetrahydrophthalic anhydride*, m. 76.5°, which (30 g.) heated with 20.5 g. P_2O_5 to 330° gave a distillate which yielded 45% durene, m. 78.5–9°. Similarly I and mixed 2-methyl-1,3-pentadiene and 2-methyl-2,4-pentadiene heated 15 hrs. to 140–60° gave 72% *1,3,3,5-tetramethyl-1,2,3,6-tetrahydrophthalic anhydride*, b_1 120°, n_D^{20} 1.4850, d_{20} 1.1037, which heated as above with P_2O_5 at first to 150–80°, then to 200–330°, yielded 62% isodurene, b_1 52°, n_D^{20} 1.5120 (crude), purified by heating with aq. NaOH and distn. in N. Pure isodurene, m. −26° to −24°, b_1 70.5–1°, b_{760} 196–7°, n_D^{20} 1.5129, d_{20} 0.8882. XLIX. Spiro[2.4]hepta-1,3-diene and spiro[2.4]heptane. R. Ya. Levina, N. N. Mezentsova, and O. V. Lebedev. *Ibid.* 1097–1100; cf. *C.A.* 48, 6972*e*.—Reaction of 115 g. $(CH_2Br)_2$ with Na deriv. of cyclopentadiene (from 40 g. cyclopentadiene and 28 g. Na) according to the previously described technique (*loc. cit.*) in liquid NH_3 gave 25% *spiro[2.4]hepta-1,3-diene* (II), b_{760} 57°, n_D^{20} 1.5078, d_{20} 0.8909. Its *adduct with maleic anhydride*, m. 97° (from petr. ether). I (6 g.) added to C_6H_6 soln. of monomeric di-Et methylenemalonate, obtained by thermal depolymerization of 12 g. polymeric ester, and the mixt. refluxed 2 hrs. gave 50% *1,1-dicarbethoxy-2,5-endocyclopropylidene-3-cyclohexene* (II), b_5 138–9°, n_D^{20} 1.4790, d_{20} 1.0879, which treated with PhN_3 yielded III, m. 141°. Hydrogenation of II in the cold over Raney Ni in dry EtOH gave *1,1-dicarbethoxy-2,5-endocyclopropylidenecyclohexane*, b_{15} 160°, n_D^{20} 1.4675, d_{20} 1.0087, which with urea and EtONa gave IV, m. 250° (from EtOH), in 55% yield. Hydrogenation of I over Raney Ni in the cold in dry EtOH gave 58% *spiro[2.4]heptane*, b_{760} 98–8.5°, n_D^{20} 1.4390, d_{20} 0.8166, whose Raman spectrum was: 318(1.5), 376(0.8), 395(1), 339(1), 387–397(2), 454(1), 499(12), 580(0), 635(0.5), 671(0.5), 718(2), 786(3), 830(2.5), 896(12), 953(10), 970(1), 999(2), 1022(4), 1094–1106(1), 1227(25), 1270–96(20), 1352(0), 1383(2.5), 1427(2), 1440(10), 1465(2). Treatment of this with $Hg(OAc)_2$ in H_2O readily cleaved the 3-membered ring and treatment of the product with aq. KBr gave 34% *1-(2-bromomercurieth yl)cyclopentanol*, m. 70°. Also in *J. Gen. Chem. U.S.S.R.* 25, 1051–3, 1055–7(1955) (Engl. translation).



(III)

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SKVARCHENKO, V. R.

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Synthesis of hydrocarbons. I. Synthesis of 1,1'-bicyclopentenyl. R. Ya. Levina, V. R. Skvarchenko, and O. Yu. Okhlobystin (State Univ., Moscow). *Zhur. Obshchei Khim.* 25, 1408–9(1955); cf. *C.A.* 50, 3257*a*.—Heating 25 g. 1,1'-dihydroxybicyclopentyl with 125 ml. 10% H_2SO_4 4 hrs. at reflux gave a mixture of *1,1'-bicyclopentenyl* (I) and *spiro-[4,5]-decan-6-one* (II), b_8 75–90°, contg. 74.5% of the latter. The mixt. was heated with maleic anhydride and the ppt. sepd., yielding pure II, b_{18} 86–7°, n_D^{20} 1.4849, d_{20} 0.9880 (*2,4-dinitrophenylhydrazone*, m. 118–19°). If the diol is heated 2 hrs. at reflux with aluminosilicate catalyst, a similar mixt. contg. 85% ketone is obtained. The diol (100 g.), 300 g. Ac_2O, treated with 3 g. concd. H_3PO_4 in 30 g. Ac_2O (prepd. 1 day previously) and stirred 5 hrs. at 42–5° then quenched in H_2O and treated with Na_2CO_3, gave, after extn. with Et_2O, and sepn. of the suspended crystals of the diacetate of the diol, 50% I, b_8 78.5°, b_5 77.5–9°, n_D^{20} 1.5268, d_{20} 0.9259, and 23.8% *1,1'-dihydroxybicyclopentyl diacetate*, b_8 120–8°, m. 118–18.5°. Passage of the diacetate at 480° over glass wool in N gave 70% I. Refluxing the diol with Ac_2O 5 hrs. gave 72% I. Hydrogenation of I over Pt black gave 100% *bicyclopentyl*, b_{12} 66.5°, n_D^{20} 1.4655, d_{20} 0.8668. G. M. K.

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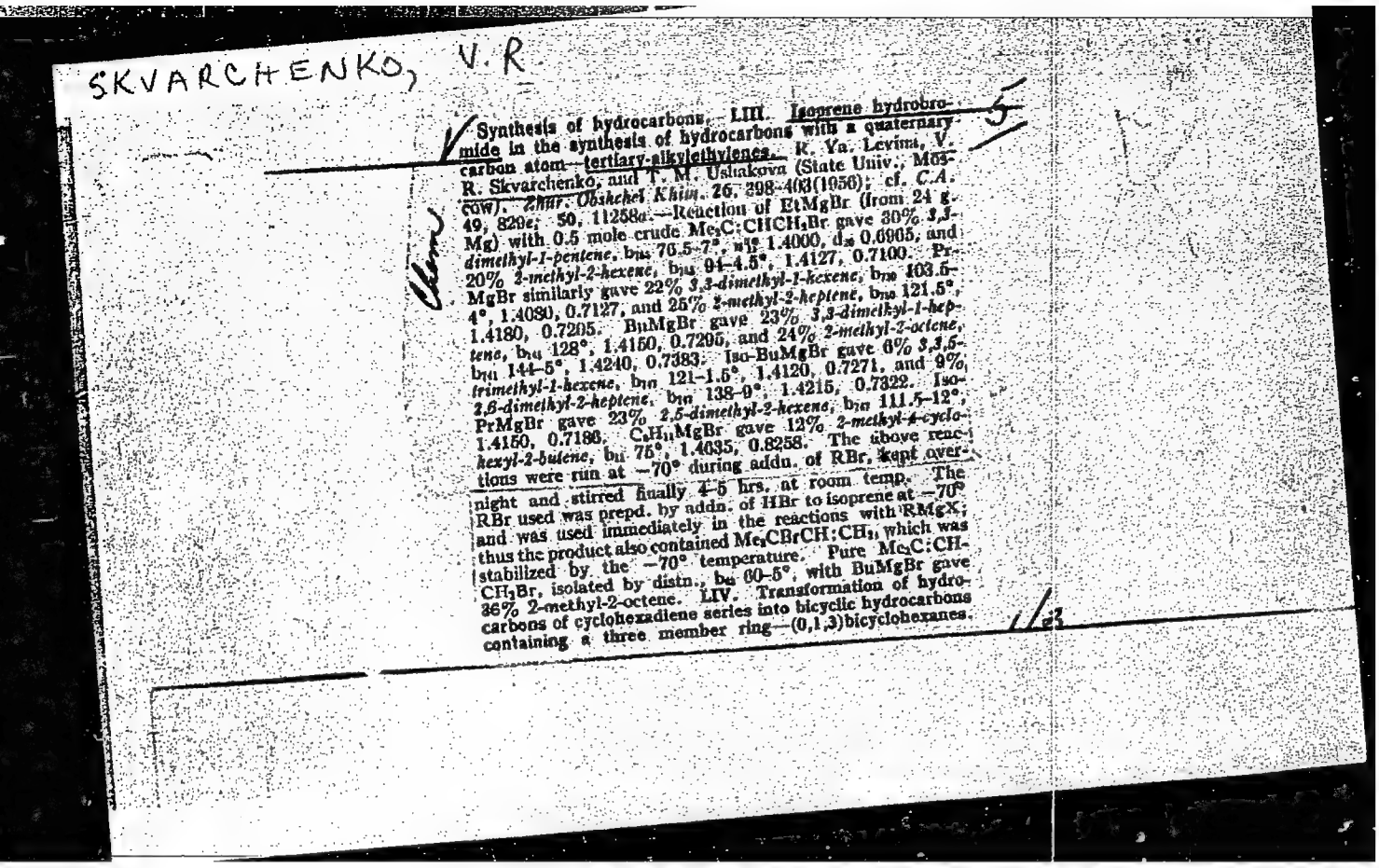

SKVARCHENKO, V. R.

Synthesis of hydrocarbons. LIII. Isoprene hydrobromide in the synthesis of hydrocarbons with a quaternary carbon atom—tertiary alkylethylenes. R. Ya. Levina, V. R. Skvarchenko, and T. M. Ushakova (State Univ., Moscow). *Zhur. Obshchei Khim.* 26, 2983-403(1956); cf. *C.A.* 49, 829e; 50, 11258a.—Reaction of EtMgBr (from 24 g. Mg) with 0.5 mole crude $Me_2C:CHCH_2Br$ gave 30% *3,3-dimethyl-1-pentene*, b_{735} 76.5–7°, n_D^{20} 1.4000, d_4^{20} 0.6905, and 20% *2-methyl-2-hexene*, b_{735} 94–4.5°, 1.4127, 0.7100. PrMgBr similarly gave 22% *3,3-dimethyl-1-hexene*, b_{760} 103.5–4°, 1.4080, 0.7127, and 25% *2-methyl-2-heptene*, b_{760} 121.5°, 1.4180, 0.7205. BuMgBr gave 23% *3,3-dimethyl-1-heptene*, b_{760} 128°, 1.4150, 0.7205, and 24% *2-methyl-2-octene*, b_{760} 144–5°, 1.4240, 0.7383. Iso-BuMgBr gave 6% *3,3,5-trimethyl-1-hexene*, b_{760} 121–1.5°, 1.4120, 0.7271, and 9% *2,6-dimethyl-2-heptene*, b_{760} 138–9°, 1.4215, 0.7322. Iso-PrMgBr gave 23% *2,5-dimethyl-2-hexene*, b_{760} 111.5–12°, 1.4150, 0.7186. $C_6H_{11}MgBr$ gave 12% *2-methyl-4-cyclohexyl-2-butene*, b_{11} 75°, 1.4635, 0.8258. The above reactions were run at −70° during addn. of RBr, kept overnight and stirred finally 4–5 hrs. at room temp. The RBr used was prepd. by addn. of HBr to isoprene at −70° and was used immediately in the reactions with RMgX; thus the product also contained $Me_2CBrCH:CH_2$, which was stabilized by the −70° temperature. Pure $Me_2C:CHCH_2Br$, isolated by distn., b_{11} 60–5°, with BuMgBr gave 36% 2-methyl-2-octene. LIV. Transformation of hydrocarbons of cyclohexadiene series into bicyclic hydrocarbons containing a three member ring—(0,1,3)bicyclohexanes.

R. Ya. Levina, V. R. Skvarchenko, . . .

R. Ya. Levina, Kim Dyal Gir, and E. G. Treshchova. *Ibid.* 920–6; cf. *C.A.* 47, 2080b.—Addn. of HBr to 105 g. 1,3-dimethyl-1,3-cyclohexadiene (b_{744} 135–6°) gave 1,3-dibromo-1,3-dimethylcyclohexane which was added in EtOH to 375 g. Zn dust with cooling; after completion of the reaction by 2 hrs. on a steam bath the org. products were fractionated yielding a range of fractions, from which the following were isolated: 25.5% *1,3-Dimethyl(0,1,3)-bicyclohexane* (I), $b_{744.4}$ 110°, n_D^{20} 1.4360, d_{20} 0.8056 [Raman spectrum (cm.$^{-1}$) 307(0), 340(3.5), 455(1), 516(0.5), 602 (2), 621(0.5), 677(15), 793(1.5), 824(0.5), 884(4), 928(2), 978(6.5), 1015(2.5), 1102(2.5), 1170(2), 1182(1), 1227(2), 1290(2), 1364(0.5), 1389(1.5), 1450–1463(10)]; 4% trans-1,3-dimethylcyclohexane, contaminated with 1,3-dimethylcyclohexene or 1-methyl-3-methylenecyclohexane, 3% 1,3-dimethyl-1-cyclohexene, and 30% 1,3-dimethylcyclohexa-1,3-diene. Hydrogenation of I over Pt-C at 120° gave *1,1,2-trimethylcyclopentane*, b_{760} 111.5–11.8°, n_D^{20} 1.4238, d_{20} 0.7751 [Raman spectrum (cm.$^{-1}$) 257–70(0.5), 357(1), 373(0.5), 504(2.5), 547(0.5), 621(0.8), 671(1), 695(5), 714(1), 795 (0.5), 833(1.8), 889(8), 930(2), 957(1), 970(0), 1014(1.5), 1050(1), 1093(7), 1183(2), 1190(2), 1230(0.8), 1270–90(1), 1322(0.7), 1382(1), 1440–60(10)]. Addn. of HBr to 1,3,5-trimethyl-1,3-cyclohexadiene as above gave the dibromide, which treated with Zn dust as above gave 10% *1,3,5-trimethyl(0,1,3)bicyclohexane*, b_{744} 125–5.5°, n_D^{20} 1.4335, d_{20} 0.7904 [Raman spectrum (cm.$^{-1}$) λ 242(1), 307(1.2), 373 (1.2), 417(1.5), 451(0.3), 529(0.5), 547(3), 586(0), 635(2), 693(12), 808 (2), 843(1), 890(5), 912(1), 970(1), 1022(1.5), 1037(1), 1056(0), 1085(1.8), 1102(1.2), 1144(4), 1164(2.5), 1183–93(2), 1227(6), 1277(7), 1342(7), 1384(4), 1440–60 (10)]; numerous other impure fractions were also obtained.

—G. M. Kosolapoff

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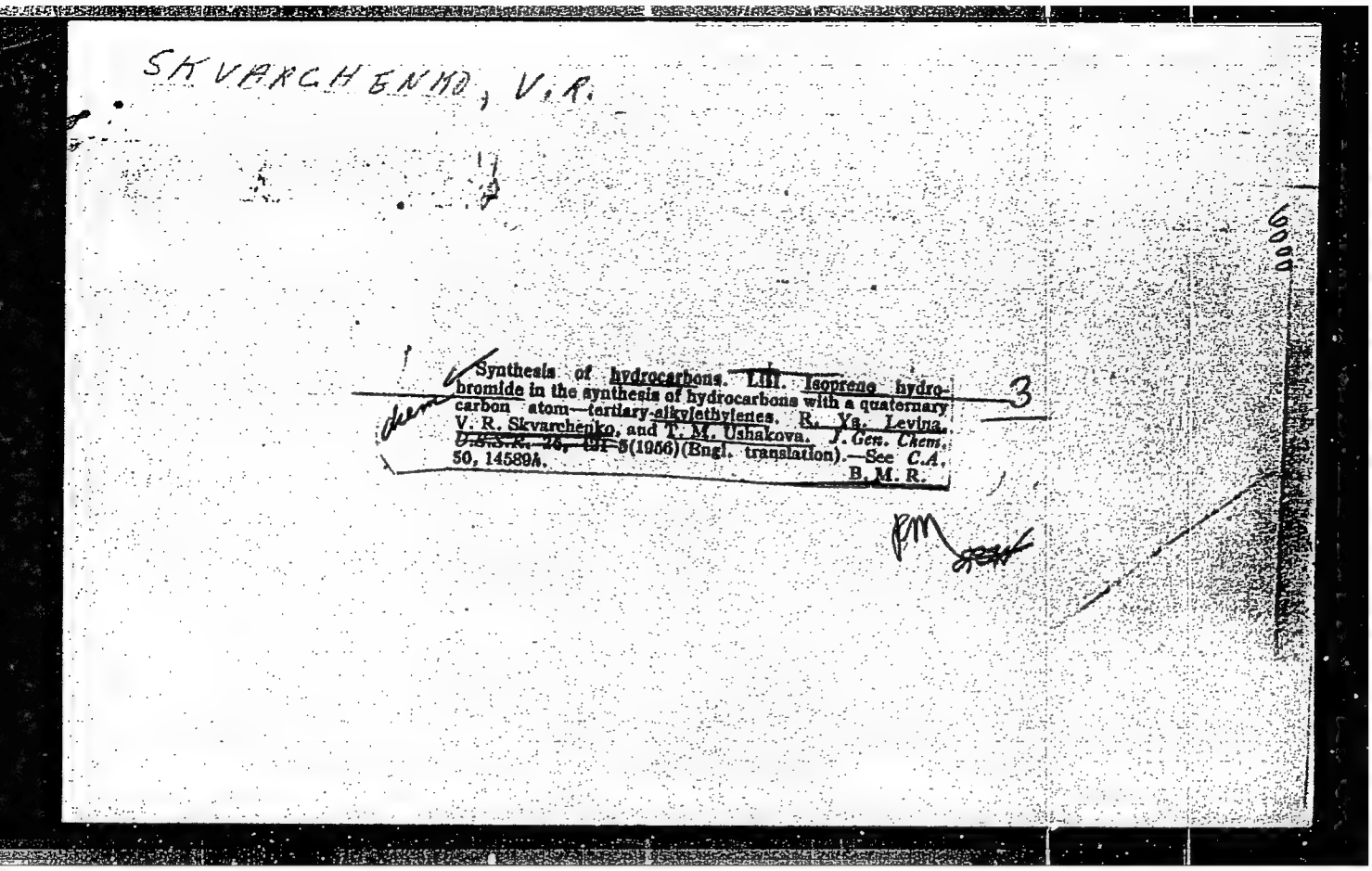

SKVARCHENKO, V.R.

6000

Synthesis of hydrocarbons. LIII. Isoprene hydrobromide in the synthesis of hydrocarbons with a quaternary carbon atom—tertiary-alkylethylenes. R. Ya. Levina, V. R. Skvarchenko, and T. M. Ushakova. *J. Gen. Chem. U.S.S.R.* 26, 131-5(1956)(Engl. translation).—See *C.A.* 50, 14589h. B. M. R.

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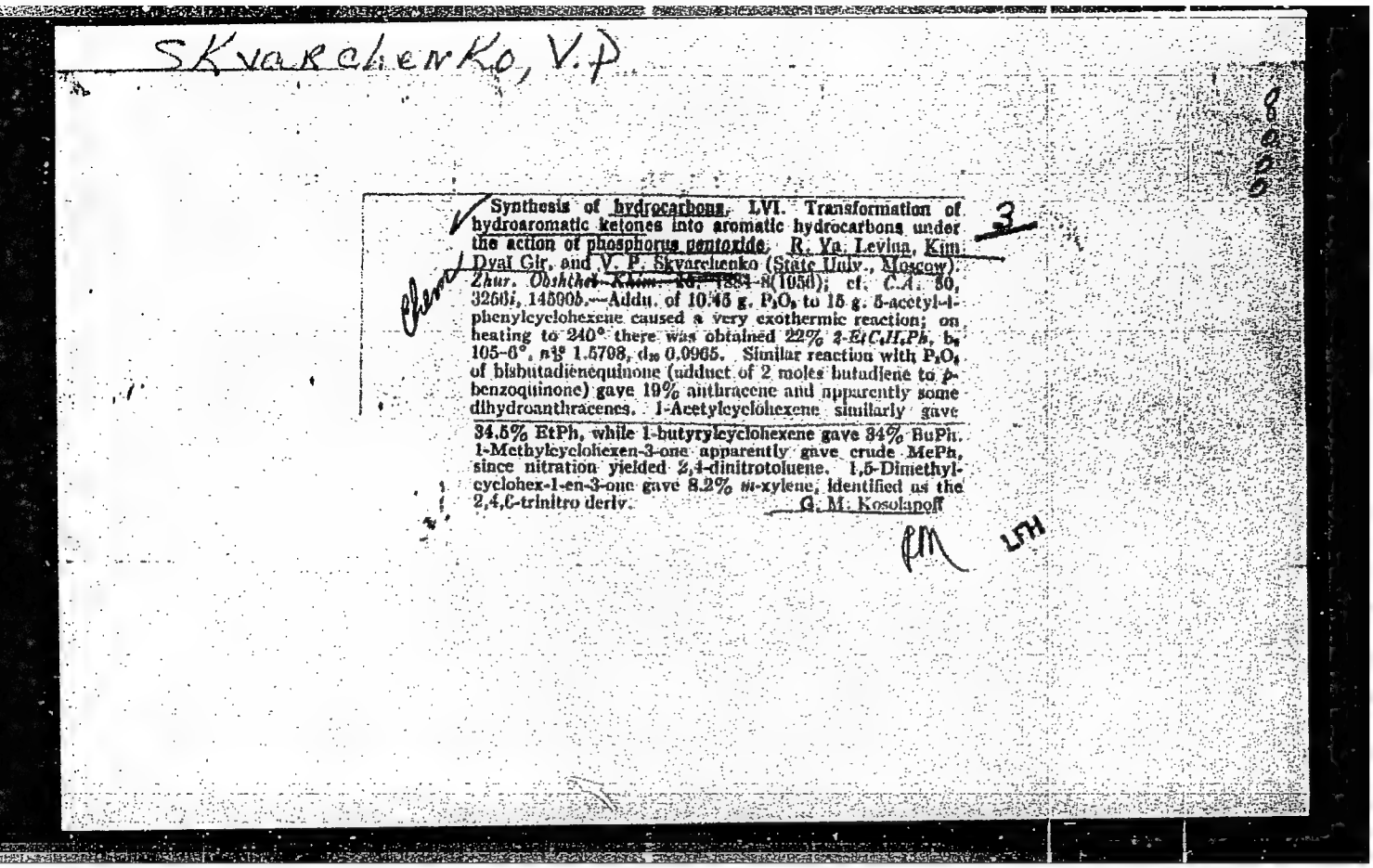

Skvarchenko, V.P.

Synthesis of hydrocarbons. LVI. Transformation of hydroaromatic ketones into aromatic hydrocarbons under the action of phosphorus pentoxide. R. Ya. Levina, Kim. Dyal Gir, and V. P. Skvarchenko (State Univ., Moscow). *Zhur. Obshchei Khim.* 25, 1891-8(1955); cf. *C.A.* 50, 3260*i*, 14590*b*.—Addn. of 10.45 g. P_2O_5 to 15 g. 5-acetyl-1-phenylcyclohexene caused a very exothermic reaction; on heating to 240° there was obtained 22% 2-EtC_6H_4Ph, b_5 105–6°, n_D^{18} 1.5708, d_{20} 0.0965. Similar reaction with P_2O_5 of bisbutadienequinone (adduct of 2 moles butadiene to *p*-benzoquinone) gave 19% anthracene and apparently some dihydroanthracenes. 1-Acetylcyclohexene similarly gave 34.5% EtPh, while 1-butyrylcyclohexene gave 34% BuPh. 1-Methylcyclohexen-3-one apparently gave crude MePh, since nitration yielded 2,4-dinitrotoluene. 1,5-Dimethylcyclohex-1-en-3-one gave 8.2% *m*-xylene, identified as the 2,4,6-trinitro deriv. G. M. Kosolapoff

SKVARCHENKO V.R.

1

Synthesis of hydrocarbons. LVII. Partial reduction of diene hydrocarbons with a conjugated system of double bonds by means of sodium in liquid ammonia. R. Ya. Levina, V. R. Skvarchenko, M. G. Kuz'min, and E. G. Treshchova (State Univ., Moscow). *Zhur. Obshchei Khim.* 26, 2195–9(1956); cf. *C.A.* 51, 1903*h*.—Reduction of 2-methyl-2,4-hexadiene (I) with $Na-NH_3$ occurs in all possible directions. Pure I (b_{744} 110.5°, n_D^{20} 1.4690, d_{20} 0.7457, prepd. by isomerization of 2-methyl-1,5-hexadiene, b_{744} 86.5–7°, n_D^{20} 1.4194, d_{20} 0.7204, prepd. by action of Mg on mixed allyl and methallyl chlorides in Et_2O; isomerization was run over Al_2O_3 at 250° in N) (22 g.) in ether added to 38 g. Na in 300 ml. liquid NH_3 at −70°, the mixt. stirred 4 hrs., then allowed to evap. overnight, excess Na decompd. with H_2O added under an Et_2O layer, and the org. layer worked up gave 53.5% mixed products, b_{744} 85.4–96°, which after fractionation were examined by means of Raman spectra which showed that the reaction gave 12% 1,2-reduction, 43% 1,4-reduction, and 45% 3,4-reduction. *2-Methyl-2-hexene* was prepd. from isoprene hydrobromide and EtMgBr (cf. above ref.), b_{744} 94–4.5°, n_D^{20} 1.4127, d_{20} 0.7100. Treatment of 3,4-dibromo-2-methylbutane with KOH under kerosene at 270° gave isopropylacetylene, which (17 g.) added to 13 g. $NaNH_2$ under Et_2O, the mixt. refluxed until NH_3 evolution ceased, treated with 43 g. Et_2SO_4, heated 30 hrs., and treated with H_2O yielded 53% *iso-PrC:CEt*, b_{744} 93°, n_D^{20} 1.4143, d_{20} 0.7352; this (7.4 g.) reduced by 12 g. Na in 200 ml. liquid NH_3 in 5 hrs. gave 60% *2-methyl-3-hexene*, b_{744} 84.1°, n_D^{20} 1.3999, d_{20} 0.6892, as pure trans isomer. iso-PrMgBr with butadiene hydrochloride yielded after refluxing 2 hrs., treatment with dil. AcOH, and distn. over Na, 18% *2-methyl-4-hexene*, b_{744} 86.5–7°, n_D^{20} 1.4040, d_{20} 0.7030, which by Raman spectrum was shown to contain 7% cis isomer. G. M. K.

Skvarchenko, V. R.

Synthesis of hydrocarbons. LVII. Partial reduction of diene hydrocarbons with a conjugated system of double bonds by means of sodium in liquid ammonia. R. Ya. Levina, V. R. Skvarchenko, M. G. Kuz'min, and E. G. Treshchova. *J. Gen. Chem. U.S.S.R.* 26, 2453-7(1956) (English translation).—See *C.A.* 51, 4927b. B. M. R.

SKVARCHENKO, V.R.; KUZ'MIN, M.G.; LEVINA, R.Ya.

Adducts of diene hydrocarbons with diethyl ester of azodicarboxylic acid. Vest.Mosk.un.Ser.mat., mekh.,astron., fiz., khim. 12 no.3:169-174 '57. (MIRA 11:3)

1.Kafedra organicheskoy khimii Moskovskogo gosudarstvennogo universiteta.
(Hydrocarbons) (Formic acid)

SKVARCHENKO, B.R.; LEVINA, R.Ya.; CHERVONEVA, L.A.

Synthesis of aromatic hydrocarbons. Part 6: Hydrocarbons of tetraline and naphthalene series. Vest. Moskl. un.Ser. mat., mekh., astron., fiz. khim., 12 no.5:177-180 '57. (MIRA 11:9)

1.Kafedra organicheskoy khimii Moskovskogo gosudarstvennogo universiteta.
(Tetraline) (Naphthalene)

SKVARCHENKO, V.R.; LEVINA, R.Ya.; KUZ'MIN, M.G.

Synthesis of hydrocarbons. Part 60: Ethyl benzene homologues prepared from the adducts of alkadienes with methylethylmaleic anhydride. Zhur.ob.khim. 27 no.7:1784-1787 Jl '57. (MIRA 10:10)

1.Moskovskiy gosudarstvennyy universitet.
(Benzene) (Olefins) (Maleic anhydride)

5(3)

AUTHORS: Skvarchenko, V.R., Levina, R.Ya., Chervoneva, L.A. SOV/55-58-5-28/34

TITLE: Synthesis of Aromatic Hydrocarbons. VIII. Alkyltetralins (Sintez aromaticheskikh uglevodorodov. VIII. Alkiltetraliny)

PERIODICAL: Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 5, pp 187 - 190 (USSR)

ABSTRACT: From adducts of isopen and 2.3-dimethyl butadiene-1.3 with the anhydrid of Δ^1-cyclohexendicarboxylic acid there was obtained by heating with phosphorus pentoxyd the 6-methyltetralin (47 %) and 6.7-dimethyltetralin (59 %). The anhydrids of 2-methyl- and 2.3-dimethyl- Δ^2-octalin-dicarboxylic-9.10 acid and of the 2-methyl- Δ^2-octalin-dicarboxylic-9.10 acid are described for the first time. - There are 10 references, 4 of which are Soviet, 5 American, and 1 German.

ASSOCIATION: Kafedra organicheskoy khimii (Chair of Organic Chemistry)

SUBMITTED: December 28, 1957

Card 1/1

SOV/51-5-5-9/23

Raman Scattering Spectra of Hydrocarbons of Various Types. V. Raman Scattering Spectra of Certain Bi-Space and Tri-Cyclic Diene Hydrocarbons

Raman spectra of 2,2'-dicyclopentenyl and of dicyclopentadiene were obtained using a glass "Shteynkhel'" spectrograph, as described in Refs 1, 2. The Raman spectra of 2,2'-dicyclohexenyl (Fig 1 curve v), 1,1'-dicyclohexenyl (Fig 1 curve a) and of 1,1'-dicyclopentenyl (Fig 1 curve b) were obtained using a triple-prism glass spectrograph ISP-51 with photoelectric recording. Table 2 gives the values of the Raman frequencies and intensities of all the five hydrocarbons. Reproducibility of the results was satisfactory and the differences between individual measurements of the strong lines did not exceed ± 3% (see Fig 2). The results obtained are discussed and interpreted in detail. As part of the discussion the authors quote the C=C frequencies and intensities of various dienes with isolated and conjugated double bonds (Table 3). There are 2 figures, 3 tables and 12 references, 11 of which are Soviet and 1 German.

SUBMITTED: December 31, 1957

Card 2/2 1. Hydrocarbons--Spectra 2. Roman spectroscopy 3. Spectrophotometers --Performance

SKVARCHENKO, V.R.; LEVINA, R.Ya.; CHERVONEVA, L.A.

Synthesis of aromatic hydrocarbons. Part 8: Alkyltetralins. Vest. Mosk.un. Ser.mat.,mekh.,astron.,fiz.,khim. 13 no.5:187-190 '58. (MIRA 12:4)

1. Kafedra organicheskoy khimii Moskovskogo gosudarstvennogo universiteta.

(Naphthalene)

AUTHORS: Levina, R. Ya. Skvarchenko, V. R., Chervoneva, L. A., Fedorchuk, L. V., Vasil'yeva, T. T. 20-118-5-25/59

TITLE: The Synthesis of Aromatic Hydrocarbons
(Sintez aromaticheskikh uglevodorodov)
A New Method of Synthesizing Hydrocarbons of the Fluorene Series (Novyy metod sinteza uglevodorodov ryada fluorena)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 118, Nr 5, pp. 938-941 (USSR)

ABSTRACT: The effect of phosphorous pentoxide on tetrahydrophtalic anhydrides leads to the formation of aromatic hydrocarbons with elimination of CO and H_2O as was proved by some of the authors (references 1-6). In the present paper the influence of phosphorous pentoxide on phenyltetrahydrophtalic aldehyde (I) (an addition of phenyl-butadiene with maleic anhydride) was investigated. In this case the reaction lead to the formation of fluorene (with a 21% yield) instead of diphenyl as might have been expected. It seems that the reaction passes through intermediate stages of an intramolecular acylation of the benzene nucleus. This leads to the foramation

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of tetrahydrofluorenone-carboxylic acid (II) which is further decarboxylated to tetrahydrofluorenone (III). Under the influence of phosphorous pentoxide this is changed into fluorene. The authors simplified this reaction by starting from phenyltetrahydrobenzoic acid (an addition of divinyl with cinnanic acid (V). When it was warmed up with phosphorous pentoxide fluorene was formed with a 63% yield. From the addition of cinnanic acid with isoprene and 2,3-dimethyl-butadiene 3 methylfluorene (5o% yield) and 2,3-dimethyl-fluorene (53% yield) were produced. The production of just 3-methylfluorene (melting point 87,5° - 88°C) and not of 2-methylfluorene (melting point 1o4°C) which is isomeric to it, from the addition of isoprene with cinnanic acid confirms the structure of this addition as 4-methyl-2-phenyl-1,2,3,6--tetrahydrobenzoic acid. From the addition of cinnanic acid with dicyclohexenyl (VIII) and dicyclopentenyl (IX), 1,2,3,4--dicyclohexane-fluorene (X) with a 83,5% yield and 1,2,3,4--dicyclopentane-fluorene (XI) with a 73% yield could be produced. Thus the reaction of the 2-aryl-1,3,6-tetrabenzoic acids (addition of diene-hydrocarbons with cinnanic acid) with phosphorous pentoxide can be recommended as a new

Card 2/3

Aromatic Hydrocarbons. IX. Synthesis of the Hydrocarbons of the Indan Series

SOV/79-29-7-17/83

were synthesized in high yields (Scheme 3) after longer heating in the autoclave. By causing the anhydride (I) to react with phosphorus pentoxide indane (IV)(69%)(Scheme 4) resulted. From (II) 5-methyl indane (V)(61%)(Scheme 5) resulted by the same method. 5,6-Dimethyl indane (VI)(84%) was obtained by causing anhydride (III) to react with phosphorus pentoxide (Scheme 6). The hydrocarbons obtained were determined according to the constants and melting points of their sulphonamides. Also the compounds (VII) and (VIII) were obtained from the anhydride of Δ^1-cyclopentene-1,2-dicarboxylic acid. These adducts were transformed by phosphorus pentoxide into the polycyclic aromatic hydrocarbons (IX) and (X)(Scheme 7). There are 17 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: July 4, 1958

Card 2/2

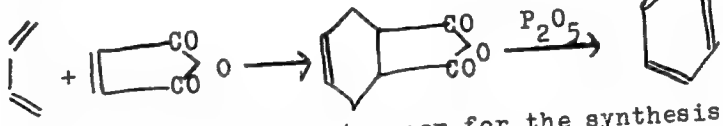
SOV/79-29-8-33/81

AUTHORS: Skvarchenko, V. R., Levina, R. Ya., Karpenko, N. F.

TITLE: Aromatic Hydrocarbons. X. Synthesis of Polymethyl-diethyl Benzenes From Adducts of 3,4-Diethyl-hexadiene-2,4 With Maleic and Alkyl-maleic Anhydrides

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2605 - 2609 (USSR)

ABSTRACT: The aromatization of the tetrahydrophthalic anhydrides under the action of phosphorus pentoxide carried out previously according to the scheme



was used in the present paper for the synthesis of polymethyl-diethyl benzenes hitherto unknown (dimethyl-, trimethyl-, and tetramethyl-diethyl benzenes). The transformation of the adducts of tetraalkyl-butadiene (of 3,4-diethyl-hexadiene-2,4) with maleic, methyl- and dimethyl-maleic anhydride under the action

Card 1/2

Aromatic Hydrocarbons. X. Synthesis of Polymethyl-diethyl Benzenes From Adducts of 3,4-Diethyl-hexadiene-2,4 With Maleic and Alkyl-maleic Anhydrides

SOV/79-29-8-33/81

of P_2O_5 was investigated. The behavior of 3,4-diethyl-hexadiene-2,4 in the "diene synthesis" has so far not been investigated. It was carried out on heating in the autoclave at 120,130, and 190°, respectively, within 10, 20, and 30 hours (yields 72.41 and 67%) (Scheme 2). From compound (I) compound (IV) was obtained by heating with P_2O_5 in a 71% yield (Scheme 3). By reaction of P_2O_5 with (II), (V) was formed (89%) (Scheme 4). The adduct of 3,4-diethyl-hexadiene-2,4 with dimethyl-maleic anhydride, compound (III), was more resistant to P_2O_5. Compound (VI) could only be obtained by heating the reaction mass for 10 hours (Scheme 5)(77%). The synthesized hydrocarbons not yet described were closely characterized. The initial diene, the 3,4-diethyl-hexadiene-2,4, was obtained by dehydration of 3,4-dimethyl-hexanediol-3,4 with acetic anhydride in the presence of orthophosphoric acid (50-54%). There are 11 references, 6 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet(Moscow State University)
SUBMITTED: July 4, 1958
Card 2/2

5.3400

77347
SOV/79-30-1-8/78

AUTHORS: Skvarchenko, V. R., Levina, R. Ya., Pugina, M. I.

TITLE: Aromatic Hydrocarbons. XII. Adducts of Alkadienes-1,3 With α-Naphthylacrylic Acid

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 46-50 (USSR)

ABSTRACT: Heating of α-naphthylacrylic acid with excess butadiene in benzene in the presence of hydroquinone, in an autoclave at 150-160° for 30 hr yields 2-(α-naphthyl)-1,2,3,6-tetrahydrobenzoic acid (I), (yield 27%), mp 113°. The same reaction with 2,3-dimethylbuta-1,3-diene at 180-190° for 14 hr yields 4,5-dimethyl-2-(α-naphthyl)-1,2,3,6-tetrahydrobenzoic acid (II), (yield 53%), mp 156-158°.

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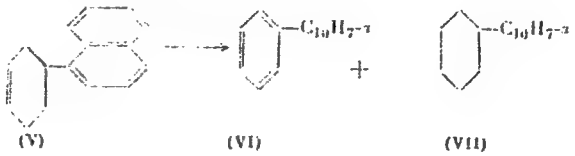
butadiene with cinnamic acid) which in reaction with P_2O_5 eliminates water and yields fluorene. The obtained α-(Δ^3-cyclohexenyl)-naphthalene was identified by conversion into a mixture of α-phenylnaphthalene (VI) and α-cyclohexlnaphthalene (VII) (by heating with Se).



(V) (VI) (VII)

The authors wish to thank L. A. Kazitsina for the absorption spectra. There is 1 table; 1 figure; and 5 references, 2 Soviet, 2 U.K., 1 German. The U.K. references are: Cook, J., Dansi, A., Hewett, C., et al., J. Chem. Soc., 1935, 1319; Cook, J., Hawett, C.,

Aromatic Hydrocarbons. XII. Adducts of Alkadienes-1,3 With α-Naphthylacrylic Acid

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SOV/79-30-1-8/78

Lawrence, C., J. Chem. Soc., 1936, 71.

ASSOCIATION: Moscow State University (Moskovskiy gosudarstvennyy universitet)

SUBMITTED: December 19, 1958

Card 4/4

5.3460

77348
SOV/79-30-1-9/78

AUTHORS: Skvarchenko, V. R., Chervoneva, L. A., Levina, R. Ya.

TITLE: Aromatic Hydrocarbons. XIII. Synthesis of Fluorenes From Adducts of 1,2-Indenedicarboxylic Anhydride

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 50-54 (USSR)

ABSTRACT: 1,2-Indenedicarboxylic anhydride was used in this work for the first time as a dienophile. Ethyl ester of hydrocinnamic acid was the starting material from which 1,2-indenedicarboxylic acid (II, yield 97%, mp 215-217°) and its anhydride (III, yield 43%, mp 184-185°) were prepared through the formation of an intermediate product, diethyl ester of 1,2-indenedicarboxylic acid (I), mp 76-77°.

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Aromatic Hydrocarbons. XIII. Synthesis of Fluorenes From Adducts of 1,2-Indenedicarboxylic Anhydride

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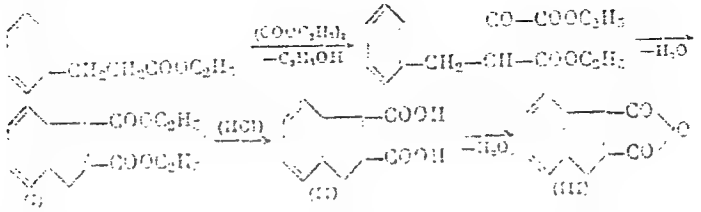
SOV/79-30-1-9/78

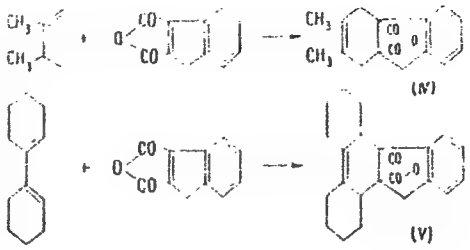


The reaction of compound III with 2,3-dimethylbuta-1,3-diene (heating at 120° in autoclave for 30 hr) and with 1,1'-dicyclohexenyl (boiling in xylene for 40 hr) yields (6%) compound IV (mp 116-119°) and compound V (yield 67.5%, mp 163-164°), respectively.

Card 2/4

Aromatic Hydrocarbons. XIII. Synthesis of Fluorenes From Adducts of 1,2- -Indenedicarboxylic Anhydride

77348
SOV/79-30-1-9/78

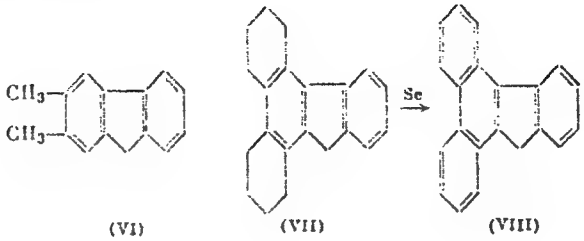


Both anhydrides (IV and V) were not described in literature. The adducts IV and V on heating with P_2O_5 eliminate carbon monoxide and water and yield (75%) compound VI, mp 123-124°, compound VII (yield 76%), mp 128-128.5°, and compound VIII (yield 41%), mp 158-159°.

Card 3/4

Aromatic Hydrocarbons. XIII. Synthesis of Fluorenes From Adducts of 1,2--Indenedicarboxylic Anhydride

77348
SOV/79-30-1-9/78



(VI) (VII) (VIII)

There are 6 references, 4 Soviet, 1 German, 1 French.

ASSOCIATION: Moscow State University (Moskovskiy gosudarstvennyy universitet)

SUBMITTED: January 22, 1959

Card 4/4

4.3400

77349
SOV/79-30-1-10/78

AUTHORS: Skvarchenko, V. R., Chervoneva, L. A., Puchnova, V. A., Levina, R. Ya..

TITLE: Aromatic Hydrocarbons. XIV. The Reaction of Phosphorus Pentoxide With Adducts of Dienes and 3,4-Dihydronaphthalene-1,2-dicarboxylic Acid

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 1, pp 54-59 (USSR)

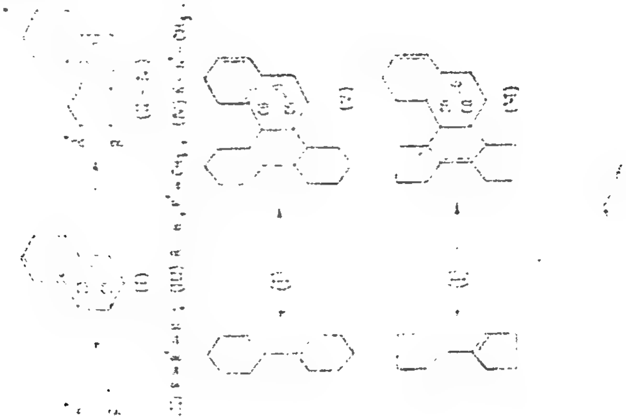
ABSTRACT: The following adducts of 3,4-dihydronaphthalene-1,2-dicarboxylic acid with butadiene, isoprene, and 2,3-dimethylbuta-1,3-diene were prepared: 1,4,9,10,11,12-hexahydrophenanthrene-11,12-dicarboxylic anhydride (II) (yield 40%), bp 160-170° (1 mm); 3-methyl-1,4,9,10,11,12-hexahydrophenanthrene-11,12-dicarboxylic anhydride (III) (yield 79.5%), mp 141-141.5° (not described in literature) and 2,3-dimethyl-1,4,9,10,11,12-hexahydrophenanthrene-11,12-dicarboxylic anhydride (IV) (yield 72%), mp 76-77°, respectively. Two adducts of 3,4-dihydronaphthalene-1,2-dicarboxylic anhydride

Card 1/6

Aromatic Hydrocarbons. XIV. The Reaction of Phosphorus Pentoxide With Adducts of Diene and 3,4-Dihydronaphthalene-1,2-dicarboxylic Acid

SOV/79-29-1-10/78

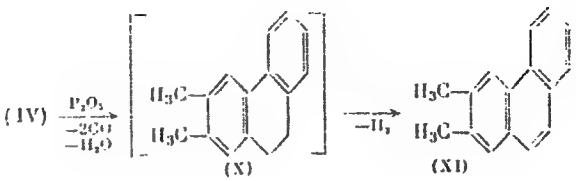
with bicyclic dienes were also prepared: compounds V (yield 50%), mp 186-187° (not described in literature), and VI (yield 85%), mp 164-165° (not described in literature).



Card 2/6

Aromatic Hydrocarbons. XIV. The Reaction of Phosphorus Pentoxide With Adducts of Dienes and 3,4-Dihydronaphthalene-1,2-dicarboxylic Acid

77349
SOV/79-30-1-10/78



(X) (XI)

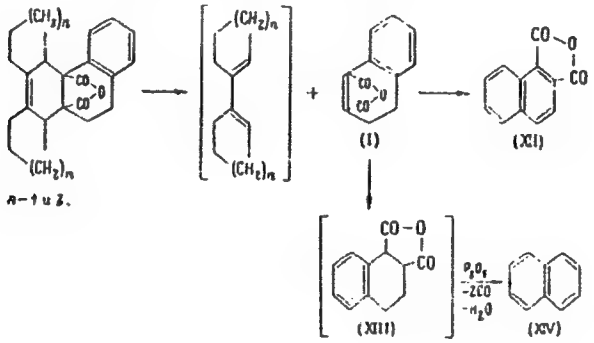
The adducts V and VI are stable toward P_2O_5; heating at 300-400° for 10 hr resulted only in formation of naphthalene-1,2-dicarboxylic anhydride (XII) and naphthalene instead of the expected phenanthrenes. This is explained by the decomposition of adducts into starting diene and dienophile at high temperature. The dienophile, 3,4-dihydronaphthalen-1,2-dicarboxylic anhydride, is converted into a mixture of naphthalene-1,2-dicarboxylic anhydride (XII) and 1,2,3,4-tetrahydro-naphthalene-1,2-dicarboxylic anhydride (XIII). The

Card 4/6

Aromatic Hydrocarbons. XIV. The Reaction of Phosphorus Pentoxide With Adducts of Dienes and 3,4-Dihydronaphthalene-1,2-dicarboxylic Acid

77349
SOV/79-30-1-10/78

latter, under the action of P_2O_5, eliminates carbon monoxide and water and becomes converted into naphthalene (the second reaction product).



Card 5/6

Aromatic Hydrocarbons. XIV. The Reaction of Phosphorus Pentoxide With Adducts of Dienes and 3,4-Dihydronaphthalene-1,2-dicarboxylic Acid

77349
SOV/79-30-1-10/78

There are 16 references, 6 Soviet, 4 U.S., 4 U.K., 2 German. The 5 most recent U.S. and U.K. references are: Fieser, L. F., Herschberg, E. B., J. Am. Chem. Soc., 57, 2192 (1935); Fieser, L. F., Herschberg, E. B., J. Am. Chem. Soc., 57, 1508 (1935); Askew, F. A., J. Chem. Soc., 1935, 512; Francis, F., Collins, F. J. E., J. Chem. Soc., 1936, 137; Fieser, L. F., Herschberg, E. B., J. Am. Chem. Soc.

ASSOCIATION: Moscow State University (Moskovskiy gosudarstvennyy universitet)

SUBMITTED: January 22, 1959

Card 6/6

S/079/60/030/007/022/039/XX
B001/B066

AUTHORS: Skvarchenko, V. R., Lin Veyen-Lyan', and Levina, R. Ya.

TITLE: Aromatic Hydrocarbons. XV. Pinacols in Diene Synthesis

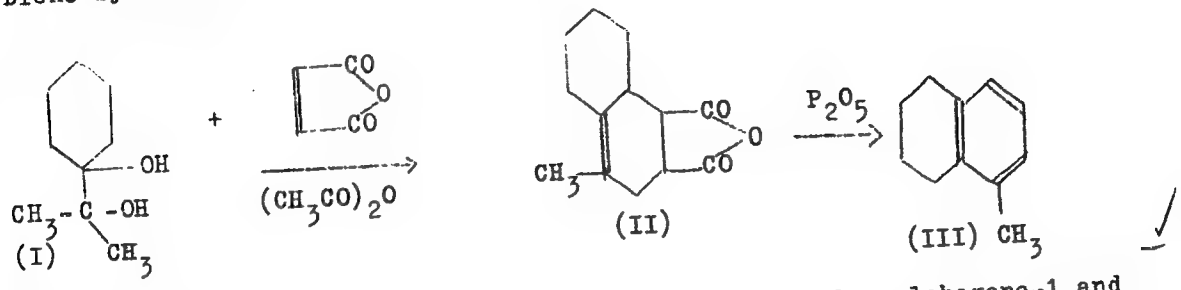
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 7, pp. 2141-2145

TEXT: On the basis of previous papers by V. R. Skvarchenko and co-workers (Refs. 1-3), the present paper describes the synthesis of 5-methyl-tetralin, 5,8-dimethyl-tetralin, and 4-methyl-indan by reaction of phosphorus pentoxide with the corresponding anhydrides of Δ^4-cycloalkenyl-dicarboxylic-1,2 acids. Contrary to the synthesis described previously, the anhydrides used were obtained from simpler components of the diene synthesis, from pinacols of cyclic ketones, maleic and methyl-maleic anhydrides (in excess). 5-methyl-tetralin (III) was obtained by treating the anhydride of acid (II) with P_2O_5 (50% yield). The anhydride was obtained by shortly heating pinacol (I) (obtained from acetone and cyclohexanone) in acetic anhydride with maleic anhydride in excess (54%):

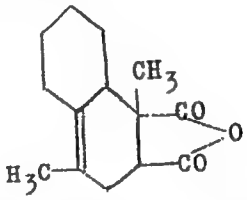
Card 1/3

Aromatic Hydrocarbons. XV. Pinacols in Diene Synthesis

S/079/60/030/007/022/039/XX
B001/B066



The direct synthesis of compound (II) from isopropenyl-cyclohexene-1 and maleic anhydride in xylene gave only a yield of 23%. Dimethyl-tetralin (VI) was obtained by heating anhydride (V)



with P_2O_5 (62%).

Card 2/3

S/079/60/030/010/030/030
B001/B066

AUTHORS: Skvarchenko, V. R., Tsybikova, D. Ts., and Levina, R. Ya.

TITLE: A New Method of Synthesizing p-Terphenyls

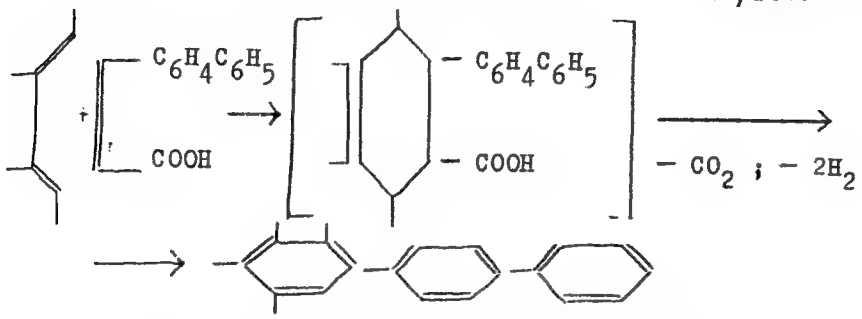
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 10, pp. 3504 - 3505

TEXT: When studying the reaction of p-phenyl cinnamic acid with different diene hydrocarbons, the authors found conditions under which the resultant addition products (2-p-diphenyl-1,2,3,6-tetrahydro benzoic acids) decarboxylate and dehydrogenate immediately to give p-terphenyls. The conditions were the following: heating of the benzene solution of p-phenyl cinnamic acid at 300° in a steel autoclave for 16-18 hours with a twofold excess of alkalies and in the presence of 0.1 g picric acid and 0.1 g hydroquinone:

Card 1/2

A New Method of Synthesizing p-Terphenyls

S/079/60/030/010/030/030
B001/B066



The p-terphenyls (I - IV) (Table) were separated by vacuum distillation (2-3 torr) of the reaction mixture, and purified by recrystallization from alcohol (I - III) or acetonitrile (IV). There is 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: July 27, 1960

Card 2/2

SKVARCHENKO, V.R.; LEVINA, R.Ya.; BELYAVSKAYA, Ye.M.

Aromatic hydrocarbons, Part 16: Aromatization of halogen-substituted tetrahydrophthalic acids (adducts of the diene synthesis) under the action of phosphorus pentoxide. Zhur. ob. khim. 30 no.11: 3535-3541 N'60. (MIRA 13:11)
(Cyclohexenedicarboxylic acid) (Aromatization)
(Phosphorus oxide)

SKVARCHENKO, V.R.; LIN VEYEN-LYAN' [Lin Veen-lian']; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 17: Synthesis of phenanthrenes.
Zhur. ob. khim. 31 no. 2:383-387 F '61. (MIRA 14:2)

1. Moskovskiy gosudarstvennyy universitet.
(Phenanthrene)

22202

S/079/61/031/006/002/005
D223/D305

53600

AUTHORS: Skvarchenko, V.R., Tsybikova D.Ts. and Levina R.Ya.

TITLE: Aromatic hydrocarbons, XIX. 2-phenylfluorene

PERIODICAL: Zhurnal obshchey khimii, v. 31, no.6, 1961, 1819-1822

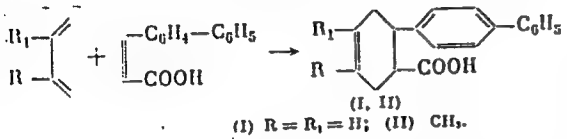
TEXT: In the present work a description is given of the method of producing hydrocarbons of 2 phenylfluorene series: this method uses as an initial dienophyl n-phenylcinnamic (n-diphenylacrylic) acid. The authors state that they achieved bonding of n-phenylcinnamic acid (n-phenyl cinnamic acid can be obtained (yield 92%) by condensation of malonic acid with n-phenylbenzaldehyde in the presence of glacial acetic acid) with divinyl, 2.3-dimethyl-butadiene- 1.3, piperyl, and isoprene by heating for 18 hours in an autoclave the benzene solutions of reacting substance (in the presence of traces of picric acid and hydroquinone)*. The bond structure (iii) (as "ortho-bond") and (IV) (as "metabond") obtained from diens and dienophyls of asymmetrical structures, has been confirmed by their transformation into corresponding 3-methyl and

Card 1/6

S/079/61/031/006/002/005
D223/D305

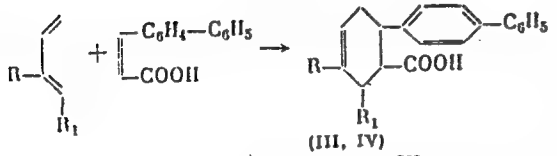
Aromatic hydrocarbons, XIX. 2-phenylfluorene

*



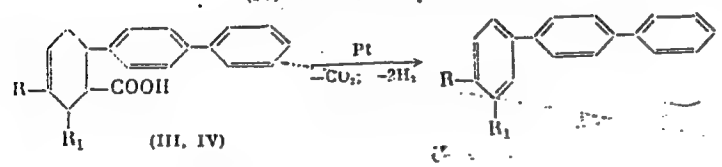
(I, II)

(I) R = R₁ = H; (II) CH₃.



(III, IV)

(III) R = H; R₁ = CH₃.
(IV) R = CH₃; R₁ = H.



(III, IV)

**

4-methyl-n-terphenyl (by decarboxylation and subsequent dehydration in the presence of platinum) as indicated **. Bonds(I-IV) representing 2-n-diphenyl-1,2,3,6-tetra-hydrobenzoic acid and their close homologues with one or two methyl groups, were changed by heating with phosphoric pentoxide into corresponding 2-phenyl-fluorenes (yield 43-51%). The reaction proceeds through the stage of intermolecular acylation, transfer of double bond and dehydration *-*. In this way from 2-n-diphenyl - 1,2,3,6 - tetrahydrobenzoic acid (I)

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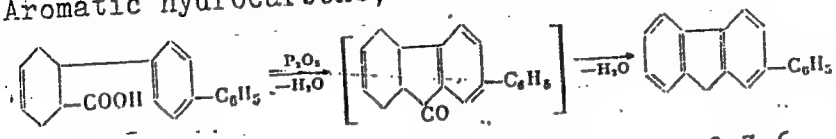
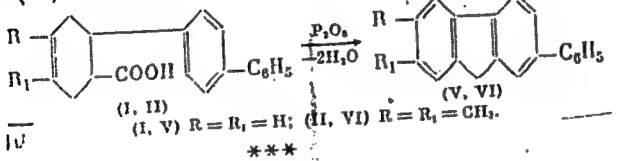
S/079/61/031/006/002/005
D223/D305

Aromatic hydrocarbons, XIX. 2-phenylfluorene



and 4.5-dimethyl - 2 - n - diphenyl - 1,2,3,6 - tetrahydrobenzoic acid (II) - bonding n-phenylcinnamic acid with divinyl and 2,3,-dimethylbutadiene - 1, 3 -, were obtained 8-methyl-2-phenyl fluorene (V) and 6,7-dimethyl-2-phenylfluorene (VI) ***. Similarly from 6-methyl - 2-n-diphenyl-1,2,3,6-tetrahydrobenzoic acid (III) and 5-methyl-2-n-diphenyl-1,2,3,6-tetrahydrobenzoic acid (IV) (bonding-n-phenylcinnamic acid with piperyl and isoprene) the authors obtained 8-methyl-2-phenylfluorene (VII) and corresponding 7-methyl-2-phenylfluorene (VIII)



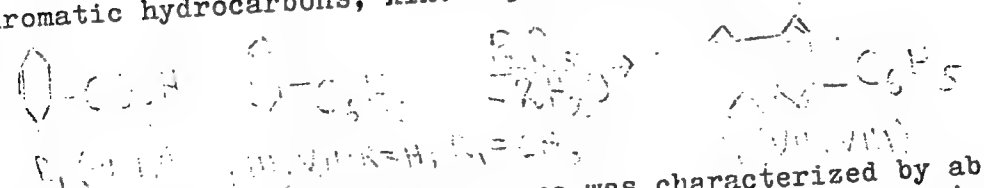
(I, II)
(I, V) R = R₁ = H; (II, VI) R = R₁ = CH₃.
(V, VI)

***

Card 3/6

22202
S/079/61/031/006/002/005
D223/D305

Aromatic hydrocarbons, XIX. 2-phenylfluorene



The synthesis of 2-phenylfluorene was characterized by absorption of UF-spectrums. The spectrum of 2-phenylfluorene is similar to that of 1-phenylfluorene (Ref 3: D.M.W. Anderson, N.Campbell, D. Leaver, W.H. Stafford, J.Chem. Soc., 1952, 3992) and 9-phenylfluorene differs from the spectrum of fluorene itself. The method of preparing n-phenylbenzaldehyde is explained. Once obtained, it was mixed with 40% sodium bisulphate solution and after leaving for a day filtered off, shaken with ether, and heated for 6-8 hours with the addition of 2N soda solution. The purified n-phenylbenzaldehyde was extracted with ether, dried with magnesium sulphate, filtered off and after removing the ether the aldehyde obtained melted at 57-58°C. n-Phenylbenzaldehyde was then added to an equimolecular

Card 4/6

22202

S/079/61/031/006/002/005
D223/D305

Aromatic hydrocarbons, XIX. 2-phenylfluorene

quantity of malonic acid in glacial acetic acid and heated on a water bath until carbon dioxide was evolved. After removing the acetic acid obtained, n-phenylcinnamic acid (yield 92%) was re-crystallized and gave m.pt. 223-224° which agrees with literature values (Ref 5: D. Hey, J.Chem.Soc. 1931, 2476). Equimolecular quantities of bonds (I-IV) and phosphorus pentoxide were heated for 1 hour at 330-350°C on a hot plate and produced hydrocarbon; distilled in vacuo (gradually decreasing pressure to 8-10 mm), purified by vacuum treatment and recrystallization. In this way the following were obtained: a) 2-phenyl fluorene (V) from divinyl bond; yield 43%, m.pt. 191-192° (from alcohol); b) 6.7-dimethyl-2-phenylfluorene (VI) from 2.3-dimethylbutadiene 1.3 bond; yield 51%, m. pt. 216-217° (from acetic acid and then alcohol); c) 8-methyl-2-phenyl fluorene (VII) from piperyl bond; yield 45% m.pt. 121-123° (from alcohol); d) 7-methyl-2-phenylfluorene (VIII) from isoprene bond; yield 45%, m.pt. 186-187°C(from absolute alcohol); 7-methyl-2-phenylfluorenone was obtained by the oxidation of 7-methyl-2-phenylfluorene (VIII)

Card 5/6

22202

S/079/61/031/006/002/005
D223/D305

Aromatic hydrocarbons, XIX. 2-phenylfluorene

(0.3 grm) with potassium dichromate (0.8 grms) in acetic acid (16 mls of glacial acetic acid and 2 mls of water) and boiling for 1.5 hours; the reacted mass was poured into cold water, the residue filtered and extracted with ethyl alcohol. The alcohol extract was steam distilled and ketone obtained, recrystallized from a mixture of benzene and petroleum ether, dried in vacuo (at 2 mm) and once more recrystallized. M.pt. 118-121°C. There are 7 references: 2 Soviet-bloc and 5 non-Soviet-bloc. The references to the English-language publications read as follows: D.M.W. Anderson, N. Campbell, D. Leaver, W.H. Stafford, J. Chem. Soc. 1959, 3992; C.K. Bradsher, L.J. Wisson, J.Chem.Soc. 68, 2149 (1946); H. Gilman, E.A. Weipert, J. Org. Ch., 22, 446 (1957).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University im M.V. Lomonosov)

SUBMITTED: June 27, 1960

Card 6/6

SKVARCHENKO, V.R.; LIN VEYEN-LYAN'; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 20: Chrysenes. Zhur.ob.khim. 31 no.9:2828-2831 S '61. (MIRA 14:9)

1. Moskovskiy gosudarstvennyy univertitet imeni M.V.Lomonosova.
(Chrysene)

S/189/62/000/005/006/006
D204/D307

AUTHORS: Treshchova, Ye. G., Skvarchenko, V. R., and Levina, R. Ya.

TITLE: Raman spectra of various classes of hydrocarbons. Communication VIII. The spectra of polyalkylbenzenes

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II, Khimiya, no. 5, 1962, 66-70

TEXT: The spectra of (a) 1,2-dimethyl-4-ethyl, (b) 1,2-dimethyl-4-butyl, (c) 1,4-dimethyl-2,3-diethyl, (d) 1,2,5-trimethyl-3,4-diethyl, and (e) 1,2,3,4-tetramethyl-5,6-diethyl benzenes were studied in the region of 150 - 1700 cm^{-1}, using a triprismatic glass ИСП-51 (ISP-51) spectrograph and a ФЭУ-17 (FEU-17) photomultiplier by a method described earlier. All compounds showed lines in the regions of 224 - 257, 547 - 556,

Card 1/2

TSYBIKOVA, D.TS., kand. khim. nauk; SKVARCHENKO, V.R., kand. khim. nauk; LEVINA, R.Ya., doktor khim. nauk

Aromatization of diene adducts; p-terphenyls. Trudy VSTI no.1: 67-73 '62. (MIRA 17:11)

SKVARCHENKO, V.R.; TSYBIKOVA, D.TS.; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 21: Polynuclear hydrocarbons including 2-phenylfluorene and p-terphenyl systems. Zhur. ob. khim. 32 no.1: 108-111 Ja '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Hydrocarbons)

SKVARCHENKO, V.R.; LEVINA, R.Ya.; SHIBAYEVA, R.P.

Aromatic hydrocarbons. Part 22: Dimethylalkylbenzenes. Fumaric acids in diene synthesis. Zhur. ob. khim. 32 no.1:111-113 Ja '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Benzene) (Fumaric acid) (Butadiene)

SKVARCHENKO, V.R.; LIN VEYEN-LYAN'; SEDYKH, N.V.; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 23: Biphenyls. Zhur. ob. khim. 32 no.1: 217-222 Ja '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet.
(Biphenyl)

SKVARCHENKO, V.R.; LIN VEYEN-LYAN'; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 24: Polynuclear hydrocarbons including the system of indan 1-(cyclopentenyl-1')-cyclohexene in diene synthesis. Zhur.ob.khim. 32 no.4:1023-1025 Ap '62. (MIRA 15:4)

1. Moskovskiy gosudarstvennyy universitet.
(Cyclohexene)

SKVARCHENKO, V.R.; TSYBIKOVA, D.TS.; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 25: New synthesis of diphenyls. Zhur.-ob.khim. 32 no.6:1727-1729 Je '62. (MIRA 15:6)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
(Biphenyl)

SKVARCHENKO, V.R.; PUCHNOVA, V.A.; LEVINA, R.Ya.

Aromatic hydrocarbons. New synthesis of anthracenes. Dokl.AN SSSR 145 no.4:831-833 Ag '62. (MIRA 15:7)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. Predstavleno akademikom A.N.Nesmeyanovym.
(Anthracene)

SKVARCHENKO, V.R.

Latest development in the synthesis of mono- and polynuclear aromatic hydrocarbons. Usp.khim. 32 no.11:1297-1339 N '63. (MIRA 17:3)

1. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.

SKVARCHENKO, V.R.; TSYBIKOVA, D.TS.; LEVINA. R.Ya.

Aromatic hydrocarbons. Part 27: 2-p-Phenoxyphenyl-1,2,3,6-tetrahydrobenzoic acid in the synthesis of 2-phenoxyfluorenes. Zhur.ob.khim. 33 no.3:995-997 Mr '63. (MIRA 16:3)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

(Cyclohexanecarboxylic acid)
(Fluorene)

SKVARCHENKO, V.R.; TSVETKOVA, D.TS.; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 28: Thermal aromatization of 1,2,3,6-tetrahydrobenzoic acids to benzene and alkyl benzenes. Zhur.ob.khim. 33 no.4:1069-1071 Ap '63. (MIRA 16:5)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Cyclohexanecarboxylic acid) (Aromatization)
(Benzene derivatives)

SKVARCHENKO, V.R.; SUKHAREVA, T.S.; LEVINA, R.Ya.

Aromatic hydrocarbons. Part 29: Stereoisomeric tetrahydrophthalic acids and their anhydrides in the reaction with phosphorus pentoxide. Zhur. ob. khim. 34 no. 3:752-760 Mr '64. (MIRA 17:6)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.

L 17947-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM
ACCESSION NR: AP5002559 S/0079/64/034/007/2210/2213

AUTHOR: Skvarchenko, V. R.; Puchnova, V. A.; Levina, R Ya. 51

TITLE: Aromatic hydrocarbons. XXX. p-bromophenyltetrahydrophthalic anhydrides and p-bromobenzyltetrahydrobenzoic acids in the reaction with phosphorous pentoxide

SOURCE: Zhurnal obshchey khimii, v. 34, no. 7, 1964, 2210-2213

TOPIC TAGS: brominated organic compound, aromatic hydrocarbon, phosphorus compound, anhydride

Abstract: The bahavior of 3-(p-bromophenyl)-1,2,3,6-tetrahydrophtahlic anhydride, the adduct of 1-(p-bromophenyl) butadiene-1,3 with maleic anhydride, and 2-(p-bromobenzyl)-1,2,3,6-tetrahydrobenzoic acid, as well as the adduct of butadiene-1,3 with p-bromobenzoylacrylic acid, reduced at the carbonyl group, was studied in the reaction of heating with phosphorous pentoxide. These adducts do not undergo the usual reactions for compounds of such structure, but those not containing bromine did undergo intramolecular acylation, followed by aromatization to the corresponding diphenylenemethane and anthracene derivatives. On the contrary, 3-(p-bromophenyl) -1,2,3,6-tetrahydrophthalic anhydride was found to be aromatized under these conditions (splitting off carbon monoxide and water) and converted to

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4-bromodiphenyl. 2-(p-Bromobenzyl)-1,2,3,4-tetrahydrobenzoic acid, when heated with toluene and phosphorous pentoxide and sulfur, entered into intermolecular acylation of toluene, followed by conversion of the intermediate hydroaromatic ketone to 2-bromo-9-p-tolylanthracene. Orig. art. has 5 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 11Jun63 ENCL: 00 SUB CODE: OC, GC

NO REF SOV: 004 OTHER: 009 JPRS:

Card 2/2

SKVARCHEVSKAYA, L. V.

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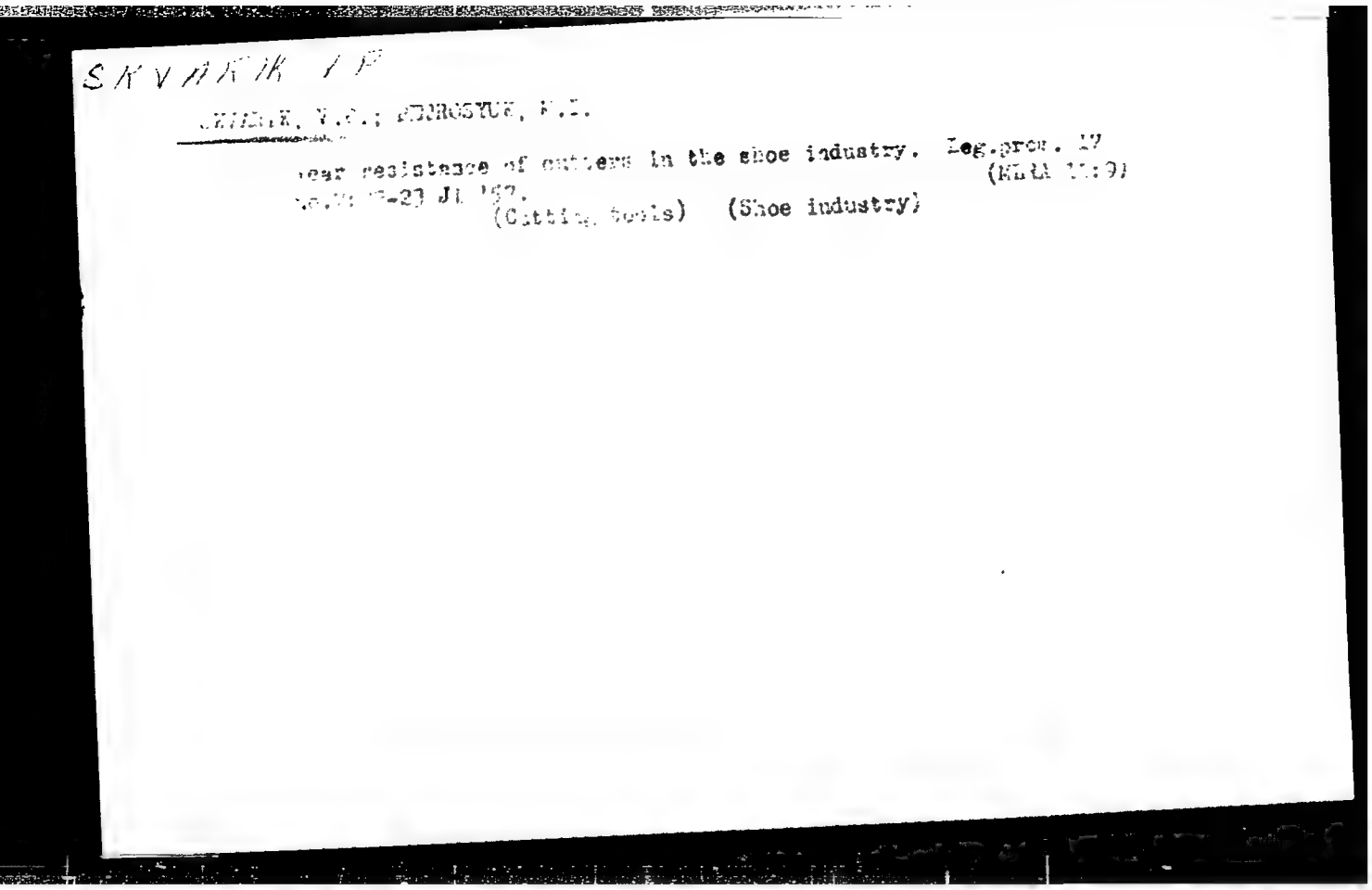

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